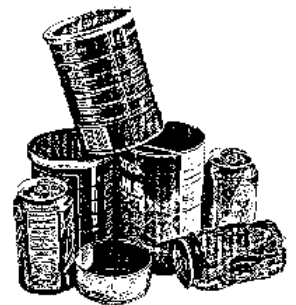
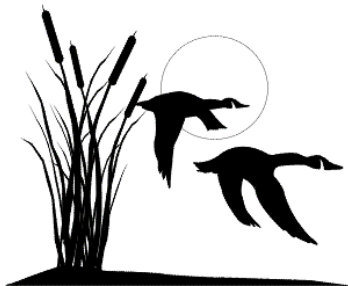


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# Guidance Manual for Developing a Stormwater Pollution Plan for Industrial Facilities



# Ecology Regional Office



**To Report a Spill**, or to determine if the spill is a hazardous substance of reportable quantity, note the Ecology region where your facility is located on the following map and call the appropriate telephone number (same number 24 hours a day):



**Northwest:** (425) 649-7000  
**Southwest:** (360) 407-6300

**Eastern:** (509) 456-2926  
**Central:** (509) 575-2490

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## Water Quality Technical Assistance

Call the Ecology staff person assigned to your county if you need technical assistance:

### Northwest Regional Office, Bellevue

Ron Devitt (425) 649-7028  
Bob Newman (425) 649-7046  
Bob Wright (425) 649-7060

King County  
Island, San Juan, Skagit, Whatcom  
Kitsap and Snohomish

### Southwest Regional Office, Olympia

Dick Schroeder (360) 407-6273

Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis,  
Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum

### Eastern Regional Office, Spokane

Paul Turner (509) 625-5181

Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant,  
Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla,  
Whitman

### Central Regional Office, Yakima

Pamela Perun (509) 454-7869


Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan,  
Yakima

# **Guidance Manual for Developing a Stormwater Pollution Plan for Industrial Facilities**

Prepared by

Washington State Department of Ecology  
Water Quality Program

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# Introduction

This guidance manual is provided to assist operators of industrial facilities to develop a Stormwater Pollution Prevention Plan (SWPPP) that conforms with Ecology's National Pollutant Discharge Elimination System (NPDES) Baseline General Stormwater Permit for Stormwater Discharges Associated with Industrial Activities.

The SWPPP must address all industrial activities at your facility that are exposed to rainwater or snowmelt.

Pollution may occur if precipitation comes in contact with materials, equipment, raw materials, intermediate products, final products, waste materials and by-products.

In order to reduce, eliminate, or prevent stormwater pollution, proper Best Management Practices (BMPs) for “source” control and “treatment” must be implemented. **Review your permit for specific requirements for the pollution prevention plans.**

**Revise and update the SWPPP** when your industrial activities change, more innovative pollution measures are implemented, after required semi-annual inspections, spill incidents, change in personnel, etc. The Plan should be as current as possible to reflect the industrial activities for the site.

An inadequate Plan that **does not** address all of the industrial activity exposed to stormwater at your facility, places you out-of-compliance with the permit. An Ecology staff person from the Water Quality Program will advise you on whether or not your SWPPP meets the permit requirements. (Refer to front of manual for regional contacts.)

The SWPPP and a copy of the stormwater permit shall be available for review by Ecology, local government officials, or for the operator of a municipal stormwater sewer system (if the stormwater discharges to their storm sewer system). Do not submit your Plan to Ecology unless you are requested to do so.

## Objectives of a Stormwater Pollution Prevention Plan

1. To implement and maintain Best Management Practices (BMPS) to identify, reduce, eliminate, and/or prevent the discharge of stormwater pollutants;
2. To prevent violations of surface water quality, ground water quality, or sediment management standards;
3. To prevent impacts to receiving water by controlling peak rates and volumes of stormwater runoff;
4. To eliminate the discharges of unpermitted process wastewater, domestic wastewater, noncontact cooling water, and other illicit discharges to stormwater drainage systems, or to surface waters of the state.



### Developing the SWPPP

#### Plan and Organize

Decide who will be responsible for developing, implementing, and maintaining your SWPPP.

Review other **existing** environmental management plans already prepared for your facility. Examples of existing plans may include Spill Control and Countermeasures, Hazardous Waste Reduction, Dangerous Waste, Toxics, Occupational Safety and Health Plan. By comparing available data, it will help promote consistency among the environmental protection plans for your facility.

## Create a Pollution Prevention Team

Some facilities may require a “team” effort in the development, implementation, updating, and maintenance of the SWPPP. In order to have an adequate SWPPP, a



description of each team member's responsibility shall be made available to the members. The size of the team should reflect the size and complexity of the facility. There must be a clear line of communication between team members and management.

After identifying who is going to be on the Pollution Prevention Team, proceed by reviewing what should be included in the SWPPP.



# Plan Requirements

## **Organize and Develop a Plan (SWPPP)**

- Identify a qualified employee or employees who are familiar with the plant operations.
- Outline their responsibilities.
- Review other existing pollution prevention plans required for the facility. This will save time and promote consistency in the plans.

## **Create a Site Map which includes the following:**

- Outline of site boundaries, buildings, and paved areas.
- Physically constructed control features used to drain, channel, or retain discharged stormwater.
- Discharge points for stormwater drainage (include discharges to ground).
- Locations of outdoor and indoor industrial activities (Key areas to identify is the outdoor activities, such as fueling stations, vehicle wash area, loading and unloading area(s), vehicle and equipment service and maintenance areas, recycle area, dumpster(s), storage area(s), stockpile area(s), petroleum transfer area, and any outdoor processing area.)
- Location of significant materials stored outside.

- Location of any surface water (for example, named and unnamed stream, river, bay, estuary, wetland, lake, ditch, slough, or any other type of water body that receives stormwater discharges from the site).
- Areas of existing and potential soil erosion.
- Lands adjacent to the site, types of industries, and, if possible, discharge points or drainage routes that may impact your site.
- Indicate buildings and activities that may be sources of non-stormwater discharges (i.e., process water treatment system, non-contact cooling water, blow-down water, fire testing sprinkler water, and wash waters).
- Location of dumpster(s) and holding area for pick-up of items for recycle.

## **Materials Inventory**

- List of materials handled, treated, stored, or disposed of that can be exposed to stormwater or snowmelt.
- List of the largest volume of materials (significant materials) that are exposed to precipitation. Identify the runoff from those materials. What method is used to control the runoff? Where are the materials stored and how are they disposed of?
- List the pollutants that may be present in your stormwater discharges.
- Review any existing discharge sampling data.

### Identify Past Spills and Leaks

- List of significant spills and leaks of toxic or hazardous pollutants since November 18, 1989 (listing of non-hazardous spills is also recommended).

### Identify Areas Associated with Industrial Activity

- Loading and unloading of dry bulk materials or liquids.
- Outdoor storage of materials or products.
- Outdoor manufacturing and processing.
- Dust or particulate generating processes.
- Roofs or other surfaces exposed to air emissions from a manufacturing building or a process area.
- On-site waste treatment, storage, or disposal.
- Vehicle and equipment maintenance and/or cleaning.

### Non-Stormwater Discharge Investigation

- Certification by a responsible official that your facility has been investigated for the presence of non-stormwater discharges.

### Best Management Practice (BMP) and Plan Design

(The description shall include the following minimum requirements.)

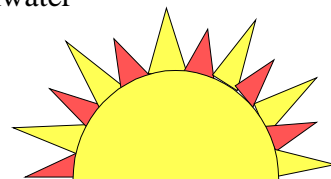
#### *Operational BMPs*

- Good Housekeeping Program.
- Routine pollution prevention maintenance schedule.
- Spill prevention and emergency cleanup plan.

- Procedures for inspections and recordkeeping.
- Conduct an **annual wet season inspection** (October 1 - April 30). Procedures include:



1. Verifying whether the description of potential pollutant sources and the site map are accurate.
2. Making certain that the pollutant reduction controls are being implemented, maintained, and is functioning adequately.
3. Observations as to whether floating materials, suspended solids, oil and grease, discoloration, turbidity, odor, etc. is occurring in the stormwater discharge(s).



- Conduct an **annual dry season** (May 1 - September 30) inspection. Procedures include:

1. Determine if unpermitted non-stormwater discharges are present.
2. If a non-stormwater discharge is identified, try to identify the source of the discharge. (Sometimes dye testing may be useful.) If you cannot identify the source, contact a water quality inspector at Ecology's regional office, and/or the local government.

General Condition G3, of the general stormwater permit for industries, cites illicit discharges to surface water(s) as being in noncompliance with the stormwater permit. Do not bypass the illicit discharge without knowing where the discharge point is located.

## Records and Recordkeeping to include in the SWPPP

- The scope of the inspection (what all did you include?)
- Name and position of the person(s) conducting the inspection.
- The date(s) of the inspection(s).
- Major observations relating to the implementation of the SWPPP.
- Dates and actions taken as a result of updating and/or modifications to the SWPPP.
- Keep a record of reports on incidents such as discharge of spills.
- Keep a record of noncompliance notification from Ecology or the local government; record the date, a description of the correction taken, and whether the Ecology inspector was notified.
- Identify the employee training schedule.

## Source Control Best Management Practices (BMP)

Selected source control BMPs for specific industrial activities were taken from Ecology's Stormwater Management Manual for the Puget Sound. The following list of BMPs are located in the Reference Section of this guidance manual:

- S1.10 Fueling Stations
- S1.20 Vehicle/Equipment Washing and Steam Cleaning
- S1.30 Loading and Unloading Liquid Materials
- S1.40 Liquid Storage in Above-Ground Tanks
- S1.50 Container Storage of Liquids, Food Wastes or Dangerous Wastes
- S1.60 Outside Storage of Raw Materials, By-Products or Finished Products
- S1.70 Outside Manufacturing Activities
- S1.90 Vegetation Management/Integrated Pest Management

- Describe and explain if you use a BMP that is **not** on the preceding list. The alternative source control BMP must be equivalent to those cited above. The goal of having a proper BMP, is to have clean stormwater leaving your site at a controlled rate. (Contact Ecology's regional water quality inspector, if you question whether an alternative BMP is adequate.)

## Erosion and Sediment Control BMPs

- Identify areas which have a high potential for significant erosion.
- Explain what measures are being taken to correct the erosion problem.
- Describe whether the corrective measures taken were **effective** during the **wet season**.

## Additional Best Management Practices (BMPs)

- Describe necessary treatment BMPs needed to control pollution
- Describe any innovative BMPs implemented

## Implementation Schedule

- When was your SWPPP implemented?

## Capital Improvements

- Describe any capital improvements (e.g., detention pond, swale, new shelter (roof) to cover exposed materials, paving, installation of oil/water separator, construction of outside storage buildings, overhangs, containment areas, covered fuel island with Portland cement pavement, etc.)
- Apply for Ecology's stormwater construction permit if you have five or more acres of disturbed soil. Include the stormwater construction permit number in your plan.

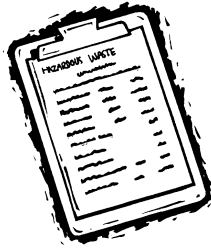
- Explain proposed date when the capital improvements will be complete; give actual completion date.

### Solid and Liquid Waste

- Provide satisfactory and legal arrangements for the handling and disposal of all liquid and solid waste generated or accumulated on the property.

### Materials Inventory and Potential Pollutants

An up-to-date materials inventory is an efficient method to identify what materials are handled or stored in a way that may contribute to stormwater contamination problems. Identify these areas on the site map.

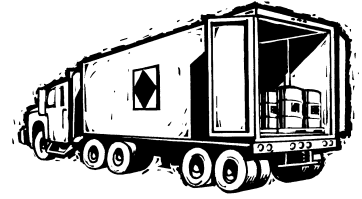


During the inventory process, focus on industrial areas where you store, process, transport, or transfer any materials. Check storage tanks, pipes, or pumping areas and note any leaks, spills, or staining. Is the loading and unloading of materials exposed to stormwater? Verify whether the dumpsters or other disposal units have “unsealed” bottoms. Do the dumpsters have a lid, or are they stored in a covered area? Also pay attention to material handling equipment, including everything from vehicles to pallets, where raw and waste materials from industrial activity are exposed. Consider areas such as the roof where particles are emitted from air vents and are likely to mix with stormwater.



Complete a narrative of the materials inventory that includes the following:

- Materials handled, treated, stored, or disposed of at the site that may be exposed to rain or run-off. Focus on areas where materials are stored, processed, transported, or transferred.
- Explain the method of how **significant materials** are handled, treated, stored, and how they are disposed of to prevent pollution of stormwater. (Identify significant materials that have been exposed to stormwater since November 18, 1989.)
  - Describe any pollutants that have a potential to pollute stormwater.
- Include any existing discharge sampling data.



**Significant materials** includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, plastic pellets, finished materials such as metallic products, raw materials used in food processing or production, hazardous substances designated under Section 101 (14) CERLA; any chemical the facility is required to report pursuant to Section 313 of Title III of SARA; fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with stormwater discharges.

**Significant amounts** means those levels of pollutants that are “amenable” (have a possibility) for needing treatment or prevention; or that have the potential to cause or contribute to a violation of surface or ground water quality or sediment management standards.



## Identify Past Spills and Leaks

Include a history of significant spills and leaks of toxic or hazardous pollutants that have occurred since November 18, 1989. This list will provide additional information on the potential sources of stormwater contamination. The Environmental Protection Agency (EPA) has defined “significant spills” to include releases within a 24-hour period of hazardous substances in excess of reportable quantities.

**Releases** should include any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.

**Reportable quantities** are set amounts of various substances in pounds, gallons, or other units and are listed in 40 CFR part 117 and 40 CFR Part 302. This is an extensive list and is therefore not included in this guidance document. If your facility releases a listed hazardous substance to the environment in excess of a reportable quantity, you are required to notify your Ecology Regional Office within 24 hours of the incident.

Although you are required to include only “significant spills,” identifying areas where smaller spills and leaks of non-hazardous materials have occurred can help determine potential sources of stormwater contamination. Note on the site map the areas where “repeated” spills have occurred or where the risk of a spill could have significant impacts to stormwater. One way of identifying whether small spills and leaks are taking place is by noting areas with “residues” of a material. Areas to focus very closely on



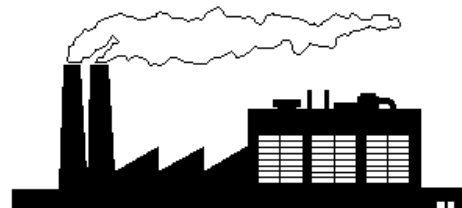
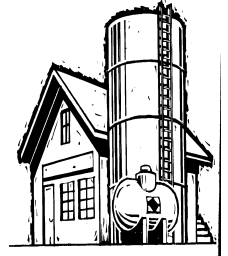
are where significant leaks or spills have occurred and residual contamination remain which may pollute the stormwater.

## Identifying Areas Associated with Industrial Activity

Identify areas and activities that may be sources of pollution and include the information on the site map.

Describe in the plan the potential of these areas and activities to be a pollutant source. Identify the pollutants that may be generated by the following activities or areas of your facility:

- Loading and unloading of dry (bulk) or liquid materials.
- Outdoor storage of materials or products.
- Outdoor manufacturing and processing.
- Dust or particulate generating processes.
- Air emissions from a manufacturing building or a process area onto a roof or other exposed surfaces.

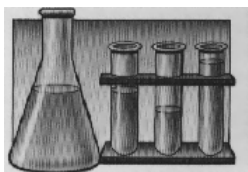


- On-site waste treatment, storage, or disposal.
- Vehicle and equipment maintenance and/or cleaning.
- Identify and include industrial activities or areas at the site which have a potential to cause pollution of the stormwater.

**Areas associated with industrial activity** can include: plant yards, immediate access roads and rail lines; material handling sites, refuse sites, sites used for the application or disposal of process waste waters, sites used for the storage (including tank farms) of raw materials, intermediate products, finished products, maintenance of equipment, sites used for residual treatment, storage, or disposal, manufacturing buildings, and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater.

Areas separate from the industrial activity are excluded from permit coverage. An example of the excluded areas are office buildings and parking lots used solely for employee parking **if the drainage does not mix with stormwater drained from the areas with industrial activity.**

## Testing for the Presence of Non-Stormwater Discharges



Examples of non-stormwater discharges include any water used directly in the

manufacturing process (process water), air conditioner condensate, non-contact cooling water, vehicle wash water, or sanitary wastes. Call the appropriate Ecology regional office if you discover a discharge of non-stormwater discharging to a surface water. ***The discharge must be eliminated within six months***, or you may need to apply for Ecology's individual NPDES or State Waste Discharge permit. Unless the discharge is either eliminated or application is made for permit coverage, you are subject to enforcement action by Ecology or third party suits.

The stormwater pollution prevention plan must include a certification by a ***responsible official*** from your facility that a test has been conducted for the presence of non-stormwater discharges. Conduct the test during the dry season (May 1 - September 30 or other appropriate time) at all stormwater discharge locations.

**Note:** Condition S6 of Ecology's general stormwater permit requires a re-analysis of the facility every year for non-stormwater discharges as part of the annual dry season inspection.

## Common Dry Weather Testing Methods

### Visual Inspection

- The easiest method for detecting non-stormwater connections into a stormwater system or surface water is simply to observe all discharge points during dry weather for odors, discolorations, abnormal flows or conditions.
- As a rule, the discharge point should be dry during a period of extended dry weather since a stormwater collection system should only collect stormwater.
- Keep in mind, however, that drainage of a particular rain event can continue for three days or more after the rain has stopped.
- In addition, infiltration of ground water into the underground collection system is also common.





## Plant Schematic Review

Reviewing the plant schematic is another simple way to determine if there are any interconnections into the on-site

stormwater collection system. Consider the following:

- A sewer map or plant schematic is a map of pipes and drainage systems used to carry process wastewater, non-contact cooling water, air conditioner condensate, and sanitary wastes (bathrooms, sinks, etc.). (It is not uncommon to find that accurate and current information is not available.)
- If you have an accurate and current map, simply examine the pathways of the different water circuits cited above.
- Determine where **interior** floor drains discharge. The drain(s) may be connected to the stormwater drainage system. If so, they **must** be disconnected and redirected to the sanitary sewer. Be sure and contact your local sewage utility before redirecting flow to the sanitary sewer.

To confirm the source of any flow during the dry season, you may need to perform one of the additional tests below:

## Smoke Testing

Smoke testing of wastewater and stormwater collection is used to detect connections between the two systems.

During dry weather, the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet, sink, or floor drain indicates that there may be a connection with the stormwater system. If so, they **must** be disconnected and

redirected to the sanitary sewer. Be sure and contact your local sewage utility before redirecting flow to the sanitary sewer.

## Dye Testing

A dye test can be performed by simply releasing a dye into floor drains, sinks, basins, or other fixtures that may discharge to a surface water or storm sewer system. Examine discharge points in the stormwater collection system or surface water for discoloration.

**Document if you are unable to test or certify** for the presence of non-stormwater discharges because you do not have access to a particular outfall, manhole, or other point of access to a final stormwater discharge point. There is an example of a 'Failure to Certify' form located in the Forms Section of this guidance manual.

## Assessment Summary

During the assessment phase, the areas, activities, or materials that may contribute pollutants to stormwater runoff should now be identified. Now you can begin to identify appropriate Best Management Practices (BMPs) to implement for the prevention and control of pollutants to stormwater.





# Required Minimum Best Management Practices

After identifying and assessing the potential and existing sources of stormwater contamination at the facility, the next step is to select Best Management Practices that will address these pollutant sources. Selecting appropriate BMPs is an important element of the stormwater pollution prevention plan (SWPPP).

In order to satisfy the requirements of the permit, describe the appropriate BMPs that will be included in the SWPPP and how they will be implemented:

- Operational
- Source Control, and/or
- Erosion and Sediment Control

## Operational BMPs

### Good Housekeeping

A good housekeeping program is essential for preventing or significantly reducing pollutants in your stormwater runoff.

Good housekeeping involves a **common sense** approach to improve and maintain a clean and orderly work environment. The following are some simple procedures to consider:

- Improve operation and maintenance of industrial machinery and processes.
- Implement careful material storage practices.
- Maintain up-to-date materials inventory:
  - Identify all chemical substances present in the work place.
  - Label all containers showing name and type of substance, stock number, etc.

- Schedule routine cleanup operations.
- Maintain well-organized work areas.
- Train employees on good housekeeping practices.
- Address spills quickly.
- Implement a recycling program.

### Preventive Maintenance

Develop a preventive maintenance program that involves inspections and maintenance of stormwater management devices and routine inspections of facility operations to detect faulty equipment. Equipment (such as tanks, containers, and drums) should be checked regularly for signs of deterioration.

Implement a routine inspection and maintenance schedule for stormwater drainage and treatment systems (if any), plant equipment, and systems that could fail and result in contamination of stormwater.

### Spill Prevention and Emergency Cleanup

Determine which areas of the facility where spills are likely to occur and identify their drainage points in the SWPPP. Ensure that employees are aware of response procedures, including material handling and storage requirements.

***Access to appropriate spill cleanup equipment is essential.***

The following is a list of spill prevention measures to consider and include in the SWPPP:

- Installation of leak detection devices.
- Adoption of good housekeeping practices.
- Performing regular visual inspections to identify areas for potential leaks or spills.
- Implement a recycling program to help reduce and reuse process materials and minimize waste on-site.
- Appoint a spill response team to implement the spill response plan.
- Identify safety measures
- Include the proper procedures for notifying authorities (e.g., police, fire, hospital, publicly-owned treatment works (POTW), etc.) in the event of a spill.
- Describe spill containment, diversion, isolation, and cleanup practices.
- Training employees on the spill response procedures.
- Stress the importance of cleaning up spills as “quickly” as possible, and disposing of the spill material properly.

Identify areas where potential spills can contribute pollutants to stormwater discharges. Specific material handling procedures, storage requirements, cleanup equipment and procedures should be identified. The SWPPP may include excerpts from other environmental plans for the facility, e.g., Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Clean Water Act. The excerpts must meet the intent of the stormwater permit requirements for a SWPPP.

## Inspections

There are two inspection requirements in the stormwater permit. The SWPPP shall include a report summarizing the scope of each inspection, the personnel conducting the inspection, the date(s) of each inspection, major observations relating to the implementation of the SWPPP. Include any modifications made to the SWPPP as a result of the inspections. The two inspections shall include:

1. The wet season (**October 1 - April 30**) inspection **conducted during a rainfall event**. Verify the following:

- The description of potential pollutant sources is accurate.
- The site map reflects current conditions.
- The controls to reduce pollutants in stormwater discharges identified in the SWPPP are being implemented and are adequate.
- Whether floating materials, suspended solids, oil and grease, discolorations, turbidity, odor, etc. is occurring in the stormwater discharge(s).

2. The dry season (**May 1 - September 30**) inspection is for the purpose of identifying flows of unpermitted non-stormwater discharges such as domestic wastewater, non-contact cooling water, or process wastewater (including leachate) to the stormwater drainage system.

If unpermitted connections or discharges of non-stormwater are discovered, you must notify your Ecology regional office. The illicit discharge must be eliminated within six months; or perhaps an individual NPDES permit or State Waste discharge permit may be required. Unless permitted by an NPDES permit, such discharges are illegal.

**Regular inspections** are a means to ensure that all of the elements of the plan are in place and working properly to prevent the pollution of stormwater runoff from your site. Consider the following when conducting inspections:

- Designate qualified, trained plant personnel to regularly inspect the facility's equipment and industrial areas; track the results of the inspections; make necessary changes, and maintain records of all inspections.
- Ensure that inspection records note when inspections were done, who conducted the inspection, what areas were inspected, what problems were found, and what steps were taken to correct any problems.
- Inspect stormwater drainage areas for evidence of pollutants entering the drainage systems.
- Evaluate the effectiveness of BMPs. Determine if the site is cleaner as a result of good housekeeping practices. Is it apparent that the employees are more familiar with good housekeeping measures, spill prevention, and response practices?
- Observe structural measures, sediment ponds, oil/water separators, catchbasins, and other stormwater BMPs to ensure proper operation.
- Revise the plan as needed **within two weeks** of an inspection that reveals potential pollutant sources, or pollution prevention measures and controls identified in the **SWPPP as being inadequate**. Implement the necessary modifications or changes in a timely manner.
- Develop a tracking or follow-up procedure to ensure that any deficiencies cited in the regular inspections are corrected.
- Sign each inspection report and keep it with the Plan.

## **Employee Training**

Employee training is essential in the implementation and maintenance of the stormwater pollution prevention plan. The purpose of having a training program is to inform personnel at all levels that they are valuable components in assuring that the goals of the SWPPP are met. Properly trained personnel are more capable of preventing spills, responding safely and effectively to an accident should one occur, and recognize situations that could lead to stormwater contamination.

**An annual employee's training program is required.** The program should include such topics as spill prevention and response, good housekeeping, material management practices, and other topics appropriate for the industrial activity at your facility.

## **Erosion and Sediment Control BMPs**

Identify, and include in your Plan, any activities, or areas that have a high potential for significant soil erosion. The Plan must identify measures to limit erosion.

Refer to the "Reference Section" of this guidance manual, if you have a need to order the Stormwater Management Manual for the Puget Sound Basin. BMPs cited in Volume II of that manual, or other equivalent stormwater BMPs, may be implemented. (BMPs in the manual may be adapted for local conditions statewide. The document is available in larger libraries across the state.)

## Additional Best Management Practices (BMPs)

The SWPPP must include **treatment** BMPs, if they are necessary to prevent the discharge of pollutants in amounts or concentrations that can be treated, or that have the potential to cause or contribute to a violation of water quality standards. Refer to the “Reference Section” of this guidance manual to review the water quality standards for Washington State.

Innovative BMPs may be considered, if the BMPs listed in available references are not adequate. Sampling of the stormwater discharge leaving your site is not currently required. However, it is a good method to determine if your existing stormwater management is adequate.

### Treatment BMPs

The Plan must describe all treatment BMPs required to provide treatment of stormwater including, but not limited to:

- Oil/water separators,
- Biofiltration,
- Infiltration basins,
- Detention facilities, and
- Constructed wetlands.

### Innovative BMPs

Innovative treatment, source control, reduction or recycling, or operational BMPs are strongly encouraged if they help achieve the objectives and goals required by the general stormwater permit.

### Professional Engineering Services

(WAC 173-240-160 Requirement for Professional Engineer)

If your stormwater pollution prevention plan will include treatment BMPs, a professional engineer, licensed in the state of Washington, is required for design and for verifying proper construction of any treatment BMPs.

## Source Control Best Management Practices

Source control BMPs are the only BMPs which are 100% effective. If a pollutant never gets into runoff, then it never has to be taken out. As a general rule, consider the following steps:

- Alter the pollutant source activity to prevent release.
- Enclose, cover, or contain an activity.
- Provide containment for control of leaks and spills.
- Discharge **contaminated** stormwater to a sanitary sewer or process water treatment.

### Source Control BMPs

Reminder: Pollutants that don’t enter runoff, never have to be treated or removed!

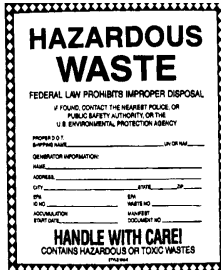
- Identify all applicable source control BMPs in your Plan.
- Minimize material exposure to stormwater or snowmelt.
- Direct **clean** stormwater away from areas of contamination.
- Redirecting the clean stormwater reduces the amount of contaminants leaving the site.
- Maintain a clean and orderly work environment.
- Store materials in appropriate containers with a content label attached.
- Keep materials to be recycled away from other wastes.

If it is too expensive to enclose an entire area, then perhaps the activity can be covered with a frame and a roof. The covered area should have an impervious (hard) surface and drained to a sanitary sewer, process treatment, or to a dead-end sump according to either local sewer authority or other permit requirements.

*(Excerpts from Stormwater Management Manual for the Puget Sound - located in Reference Section of this manual.)*

BMP S1.10	Fueling Stations
BMP S1.20	Vehicle/Equipment Washing and Steam Cleaning
BMP S1.30	Loading and Unloading Liquid Materials
BMP S1.40	Liquid Storage in Above-Ground Tanks
BMP S1.50	Container Storage of Liquids, Food Wastes, or Dangerous Wastes
BMP S1.60	Outside Storage of Raw Materials, By-Products, or Finished Products
BMP S1.70	Outside Manufacturing Activities
BMP S1.80	Emergency Spill Cleanup Plans
BMP S1.90	Vegetation Management/Integrated Pest Management
BMP S2.00	Maintenance of Storm Drainage Facilities

## Solid and Liquid Waste Handling and Disposal



The owner or operator of an industrial facility is responsible for the legal handling and disposal of all liquid and solid waste generated or accumulated on their

site. Disposal of waste materials from maintenance activities, including liquids and solids from the maintenance of catch basins and other stormwater facilities, shall be conducted in accordance with the Minimum Functional Standards for Solid Waste Handling, Chapter 173-304 WAC.

Liquids or solids generated in the collection, storage, or treatment of contaminated stormwater may also be regulated as a hazardous or dangerous waste, and are subject to the Dangerous Waste Regulations, Chapter 173-303 WAC.

Generators of solid and liquid wastes are required to know the character of their wastes and whether it meets the criteria for a hazardous or dangerous waste. At a minimum, watch for sediments, sludges, or dirt with a solvent odor or oil texture. In these cases, the material will have to be fully identified prior to disposal. Even if there aren't any suspect signs to the sediment or sludge, test it at least once to determine that it does not designate as a dangerous or hazardous waste. Typically, a Toxicity Characteristic Leaching Procedure (TCLP) test for heavy metals is sufficient.

Containment, collection, separation, and settling are some of the control techniques for stormwater that will result in the generation of solid and liquid wastes. In some cases, management and housekeeping techniques could also generate solid and liquid wastes. Examples include drip pans, cleanup of process areas, and spill removal.

Leachate from solid waste material handling and disposal sites shall not be discharged to state ground or surface waters without providing all known, available, and reasonable methods of treatment; nor shall such leachate cause violations of the state water quality standards for ground water, surface water, or violations of sediment management standards.

Consider the following guidelines when handling and disposing of solid waste from your facility:

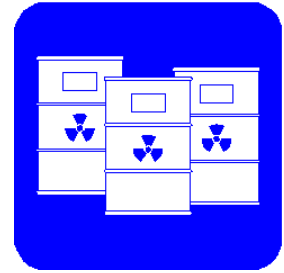
- When collecting or transporting solid waste, avoid littering or the creation of other nuisances at the loading point.
- Containers used for the collection and transportation of solid waste should be tightly covered to prevent littering. The containers should be durable and constructed of easy to clean material.
- Where garbage is being collected or transported, containers should be

cleaned as necessary to prevent nuisances, odors, and insect breeding, and maintained in good repair.

- Solid waste containers should be loaded and moved in such a manner that the contents will not spill or leak in quantities to cause a nuisance. Where such spillage or leakage does occur, the waste should be picked up immediately and returned to the vehicle or container and the area properly cleaned.
- Containers should be routinely inspected for repairs such as missing or loose-fitting covers or leaking containers.

Solid waste containers should be:

- Rigid and durable.
- Corrosion resistant.
- Non absorbent and water tight.
- Rodent proof and easily cleanable.
- Equipped with a close-fitting cover.



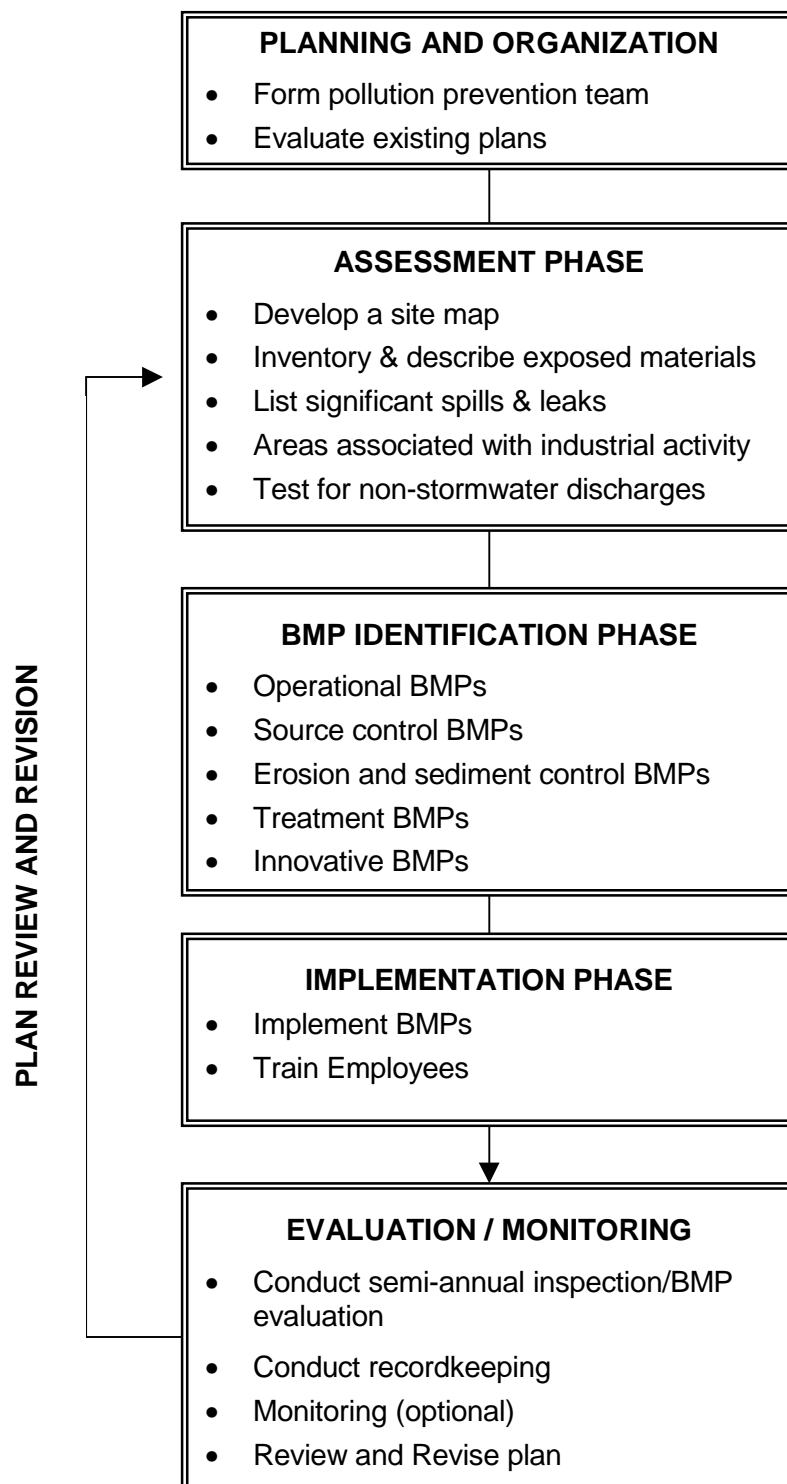
If you need help with the proper disposal and handling of the solid waste at your facility, first, contact the **local** jurisdiction solid waste or public works department. Contact the county official where your facility is located from the following list:

PHONE	COUNTY/CITY	PHONE	COUNTY/CITY
(509) 659-3276	Adams	(509) 962-7542	Kittitas
(509) 243-2074	Asotin	(509) 773-4448	Klickitat
(360) 676-6850	Bellingham, City of	(360) 740-1123	Lewis
	Benton		Lincoln
(509) 786-5611	Prosser	(509) 725-7041	Office
(509) 736-3084	Tri-Cities	(509) 725-0122	Transfer Station
(509) 886-0899	Chelan/Douglas	(360) 427-9670	Mason Landfill
	Clallam	ext 271	
(360) 417-4875	Port Angeles City Landfill	(509) 422-7315	Okanogan
(360) 417-0120	Olympic Disposal	(360) 875-9368	Pacific
(360) 737-6118	Clark/Skamania	(509) 447-4821	Pend Oreille
ext 4352			
(509) 382-4121	Columbia		Pierce
(360) 577-3125	Cowlitz/Wahkiakum	(253) 798-4050	General Number
(509) 775-5217	Ferry	(253) 798-4115	Recorded Information
(509) 545-3551	Franklin		Web Page
(509) 843-1262	Garfield		<a href="http://www.co.pierce.wa.us/SolidWaste">www.co.pierce.wa.us/SolidWaste</a>
(509) 754-6082	Grant	(360) 378-2114	San Juan
(360) 249-4413	Gays Harbor	(360) 336-9400	Skagit
(360) 679-7386	Island	(425) 388-3429	Snohomish
(360) 385-9160	Jefferson	1-800-732-9253	Snohomish, City of
	King	(509) 625-7898	Snohomish County/City of
(206) 296-6542	County Solid Waste Utility (located outside of City)	(509) 684-4548	Stevens
(206) 684-7600	Seattle Solid Waste Utility (General Information or Dial '0' for Reception)	(253) 591-5543	Tacoma, City of
(206) 389-7304	City Facilities that Recycle	(360) 754-4111	Thurston
(206) 296-8800	County Facilities that Recycle	(509) 527-4463	Walla Walla
(360) 895-5777	Kitsap	(360) 676-6724	Whatcom
		(509) 397-3861	Whitman
		(509) 574-2450	Yakima

Contact a solid waste representative at Ecology's regional office if you are unable to contact the local government official. The Regional office numbers are as follows:

Central Regional Office in Yakima ..... (509) 575-2490  
 Eastern Regional Office in Spokane ..... (509) 456-2926  
 Southwest Regional Office in Lacey ..... (360) 407-6300  
 Northwest Regional Office in Bellevue ..... (425) 649-7000

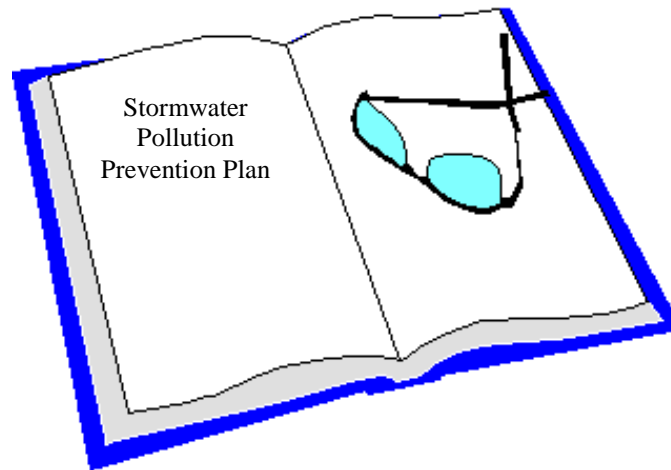
## Stormwater Pollution Prevention Planning Flowchart



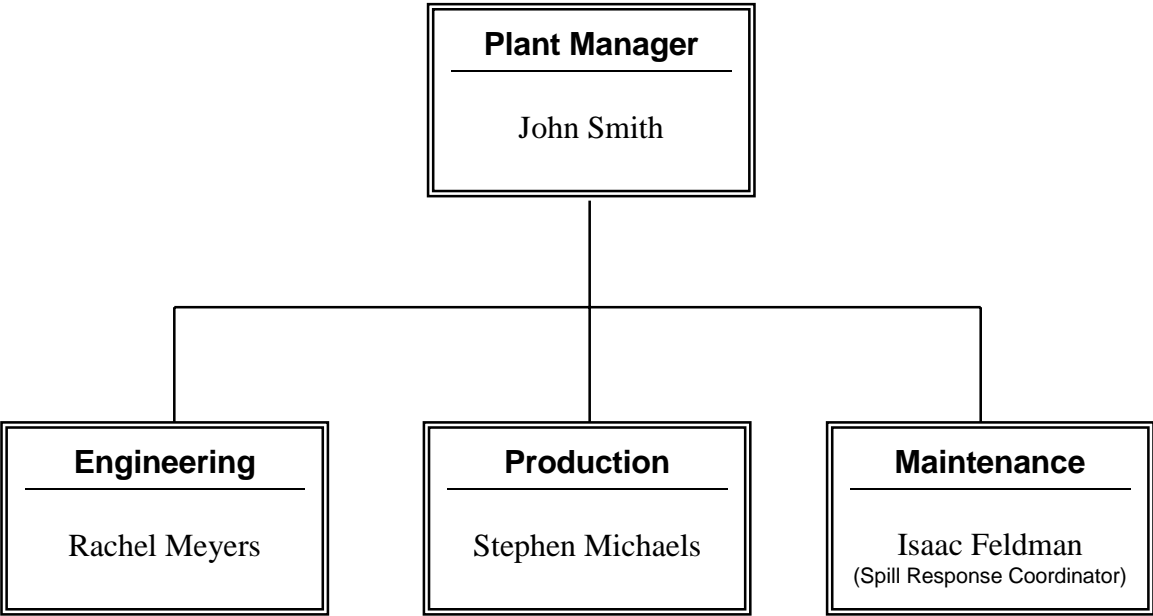


# Sample Plan

## Stormwater Pollution Prevention Plan for Industries



# Pollution Prevention Team Organization Chart



## **A-B-C Metals In-House Worksheet**

### **Initial Preliminary Checklist on Stormwater Pollution Plan**

- \_\_\_\_\_ Identify and limit soil erosion on site.
- \_\_\_\_\_ Research and implement use of nontoxic materials.
- \_\_\_\_\_ Implement a recycle program for any and all recyclable waste materials.
- \_\_\_\_\_ Prepare SWPPP implementation schedule and milestone dates.
- \_\_\_\_\_ Update the SWPPP and implement new innovative techniques developed.
- \_\_\_\_\_ Always have SWPPP and related permit documents available for inspectors from state and local governments.
- \_\_\_\_\_ Plan to call Ecology staff person cited in the stormwater permit coverage letter whenever technical assistance is needed for water quality issues for the facility.
- \_\_\_\_\_ Identify areas where other potential pollutants spills may occur besides oil.
- \_\_\_\_\_ Conduct visual observations for flows, odors, oil sheens, or other abnormal conditions.
- \_\_\_\_\_ Review material handling procedures, storage, cleanup equipment.
- \_\_\_\_\_ Implement maintenance schedule for all treatment systems, storm drains, catch basins, and plant equipment that may contaminate stormwater.
- \_\_\_\_\_ Identify materials and equipment exposed to stormwater.
- \_\_\_\_\_ Place dumpsters under cover or with a lid; assure no leaching from bottom.
- \_\_\_\_\_ Implement good housekeeping procedures for entire site.
- \_\_\_\_\_ Implement training for all employees in the industrial area.
- \_\_\_\_\_ Conduct a wet season (October 1 - April 30) and dry season (May 1 - September 30) inspection annually to verify that no illegal discharges go to storm drains.
- \_\_\_\_\_ Implement source control Best Management Practices (BMPs) for fueling station, vehicle equipment, loading and unloading areas, dangerous waste material and outside storage of materials.

## **A-B-C Metals**

### **Stormwater Pollution Prevention Plan Comparison with Spill (SPC) Plan**

A-B-C Metals Company has a spill prevention plan in operation for its above ground fuel storage tank. Overlaps are noted below:

- Isaac Feldman is the Spill Coordinator and reports directly to John Smith. He will be the Stormwater Spill Prevention and Response Coordinator.
- A complete description of potential for oil to contaminate stormwater discharges including quantity of oil that could be discharged.
- Curbing around above ground fuel storage tank identified on site map.
- Expanded Spill Plan schedules and procedures to include Stormwater Pollution Prevention Plan requirements.
- Incorporated Spill Plan training into stormwater training programs on spill prevention and response.
- Relevant portions of the Spill Plan will be included in this plan.

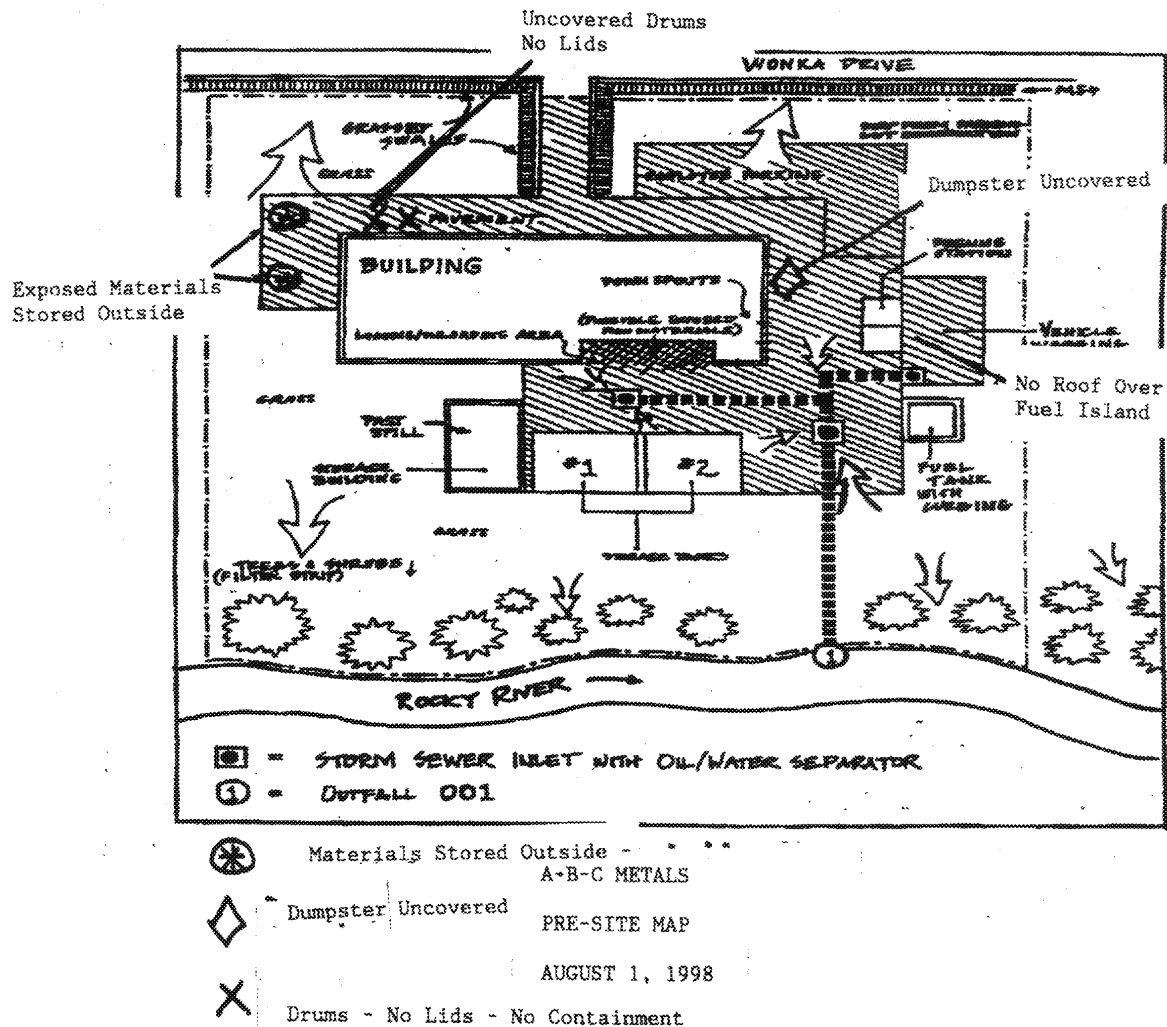
<p align="center"><b>A-B-C Metals</b>  <b>40 Wonka Drive</b>  <b>Anytown, OK 12345</b>  September 1998</p>	
<p align="center"><b>Stormwater Pollution Prevention Plan</b></p>	
Emergency Contact: John Smith	Work Phone: (101) 555-1234
Title: Plant Manager	Emergency Phone: (101) 555-6929
Secondary Contact: Rachel Meyers	Work Phone: (101) 555-3923
Title: Engineering Supervisor	Emergency Phone: (101) 555-6789
Type of Manufacturer: Metal Fabrication	Startup Date: August 10, 1989
Operating Schedule: 8:00 a.m. - 11:30 p.m.	
Number of Employees: The plant has 21 employees, including part time staff. Shifts overlap all day.	
Average Wastewater Discharge:	
NPDES Permit Number: SO3999911 Effective: September 3, 1998	
Stormwater Pollution Plan Implemented: September 10, 1998	

<b>Pollution Prevention Team</b>	<b>Worksheet #1</b>	
	<b>Completed by:</b> <u>John Smith</u>	
	<b>Title:</b> <u>Plant Manager</u>	
	<b>Date:</b> <u>September 3, 1998</u>	
Responsible Official: _____ Title: <u>Plant Manager</u> Team Leader: <u>John Smith</u> Office Phone: <u>(101) 555-1234</u> Responsibilities: <u>Signatory authority; coordinate all stages of plan development and implementation; coordinate employee Training program; keep all records and ensure reports are submitted.</u> _____ _____		
(1) <u>Stephen Michaels</u> Title: <u>Production Supervisor</u> Office Phone: <u>(101) 555-3923</u> Responsibilities: <u>Note any process changes; help conduct inspections.</u> _____ _____ _____		
(2) <u>Rachel Meyers</u> Title: <u>Environmental Engineering Dept. Supervisor</u> Office Phone: <u>(101) 555-5870</u> Responsibilities: <u>Responsible for implementing the pollution prevention maintenance program; oversee inspections.</u> _____ _____ _____		
(3) <u>Isaac Feldman</u> Title: <u>Maintenance Dept. Supervisor</u> Office Phone: <u>(101) 555-0482</u> Responsibilities: <u>Mr. Feldman is the spill response coordinator; oversees "good housekeeping."</u> _____ _____ _____		
(4) <u>Group Activities</u> Title: _____ Office Phone: _____ Responsibilities: <u>Developing the plan elements, choosing stormwater management options.</u> _____ _____ _____		

**Date:** September 3, 1998

## Developing a Site Map

Instructions: Draw a map of your site including a footprint of all buildings, structures, paved areas, and parking lots.



## Developing a Site Map

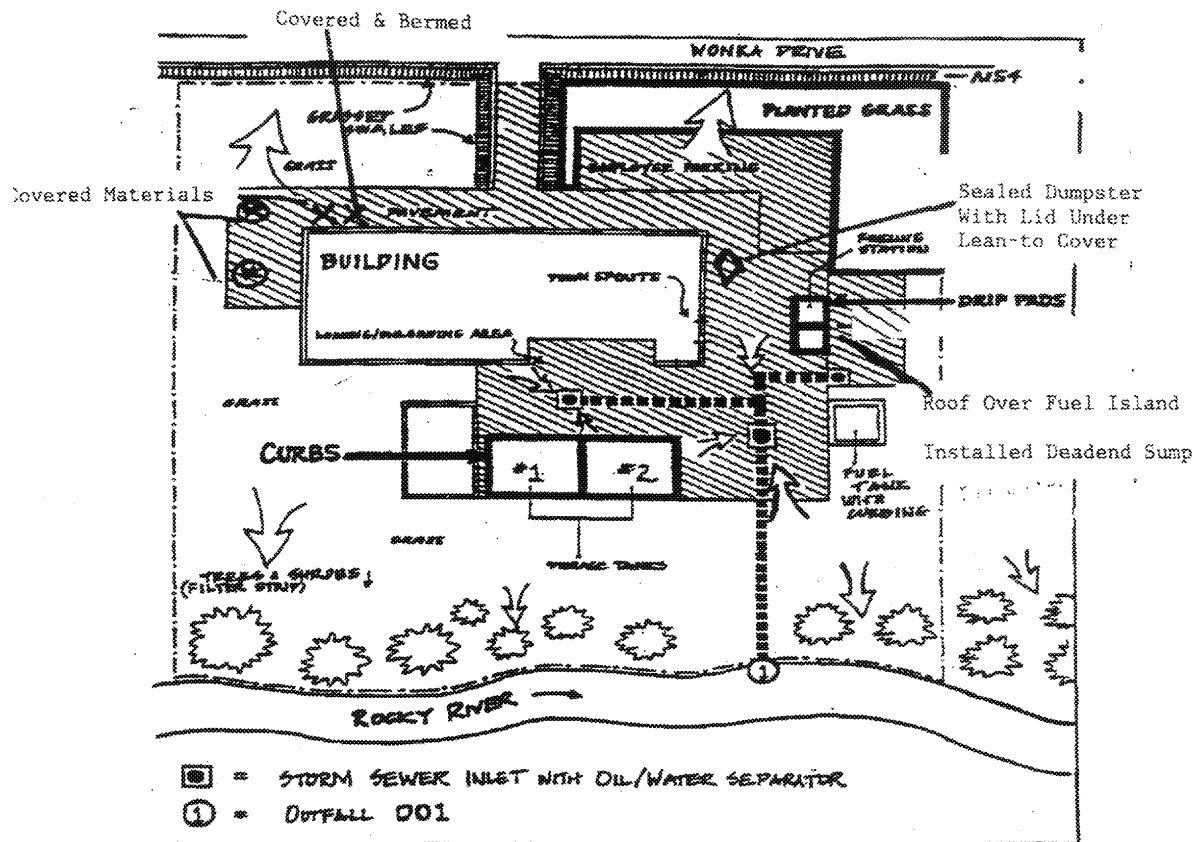
### Worksheet #2

Completed by: John Smith

Title: Plant Manager

Date: September 3, 1998

Instructions: Draw a map of your site including a footprint of all buildings, structures, paved areas, and parking lots.



☐ Materials Stored Outside - Covered

◇ Dumpster With Lid Under Lean-to

✕ Drums In Containment Area

A-B-C METALS

POST-BMP SITE MAP

SEPTEMBER 3, 1998



# Material Inventory

**Worksheet #2**  
**Completed by:** John Smith  
**Title:** Plant Manager  
**Date:** September 3, 1998

List materials handled, treated, stored, or disposed of at the site that may potentially be exposed to precipitation or runoff. Also indicate if any spills or leaks of pollutants have occurred since November 18, 1989. (Including any pollutants no longer handled on-site.)

[illegible]



## List of Significant Spills and Leaks

Worksheet #4

Completed by: John Smith

Title: Plant Manager

Date: September 3, 1998

List all spills and leaks (as indicated on Worksheet #2) of toxic or hazardous pollutants since November 18, 1989, that were significant. Significant spills and leaks include but are not limited to, release of oil or hazardous substances in excess of reportable quantities (see chapter 2 of text). Although not required, we suggest you list spills and leaks of non-hazardous materials.

Date (month/day/year)	Location (as indicated on site map)	Description				Response Procedure		Preventive Measure Taken
		Type of Material	Quantity	Source, If Known	Reason for Spill/Leak	Amount of Material Recovered	Material No longer exposed to Storm-water (Yes/No)	
1 <sup>st</sup> year prior								
8/21/98	Storage bldg	Oil	10 gal	Tank #2	Leaky valve	8 gal – balance	Yes	Complete the installation of
						contained and mopped		Curbing around tank Have “kitty” litter available

**Non-Stormwater Discharge  
Dry Weather (May to September 30)  
Assessment & Certification**

**Worksheet #5**

**Completed by:** Rachel Meyers

**Title:** Engineering Dept – Supervisor

**Date:** September 3, 1998

The dry season inspection shall determine the presence of unpermitted non-stormwater discharges such as domestic wastewater, non-contact cooling water, or process wastewater (including *leachate*) to the *stormwater drainage system*.

Tests may include: visual observations of flows, odors, and other abnormal conditions; dye tests, television line surveys; and/or analysis and validation of accurate piping schematics.

Date	Discharge Location (as indicated on the site map)	Method used to test or Evaluate Discharge	Describe Results from Test for Presence of Non- Stormwater Discharge	Identify Potential Significant Sources	Person who Conducted The Test
8/21/97	001	Visual inspection	No discharge observed		R. Meyers and S. Goodhope
8/21/98	001	Visual inspection	Significant flow; oil	Vehicle wash ongoing at time	R. Meyers and S. Goodhope
9/1/98	001	Visual inspection	Small amount of clear discharge	Suspected to be delayed stormwater drainage from storm that occurred 8/30/98	R. Meyers and S. Goodhope

**CERTIFICATION**

*Based on my inquiry of the person or persons who manage the systems or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

**A. Name & Title:** Cheryl Glenn, Plant Manager

**B. Phone:** (101) 555–1239

**C. Signature:** Cheryl Glenn

**D. Date Signed:** 9/4/98

**FIELD NOTEBOOK**

For Non-Stormwater Discharge Inspections

**Inspection Team:**

R. Meyers

S. Goodhope

Completed by: Rachel Meyers

Date: 8/21/97

Time: 10:50 a.m.

Time since last rain: 42 hours

Quantity of last rain: 0.12 inches

Flow observed: No

Signature: Rachel Meyers

Completed by: Rachel Meyers

Date: 8/21/98

Time: 3:20 p.m.

Time since last rain: 5 days

Quantity of last rain: 0.5 inches

Flow observed: Yes

Description: No odor; clear color  
(soap suds); oily sheen; some  
sediment

Temperature: cold (37.5°F)

Volume: Collected ten gallons/minute in buckets

This was the source of the flow.

Signature: Rachel Meyers

Completed by: Rachel Meyers

Date: 9/1/98

Time: 12:15 p.m.

Time since last rain: 96 hours

Quantity of last rain: 2.5 inches

Flow observed: Yes

Description: No odor; clear; some sediments;  
Few small pieces of paper (trash)

Temperature: Cold (42.3°F)

Volume: Collected one gallon in 5 minutes

Comments: We suggest that the flow was left over from storm  
that occurred on 8/30/98 (4 days ago)

Signature: Rachel Meyers

## **A-B-C Metals Site Assessment Inspection**

*September 3, 1998*

### **Evaluate the site for pollutants.**

There are eight areas where material handling and storage activities take place.

- The storage building contains tanks of oils, lubricants, solvents, and acids. The tanks were examined for possible leaks. We found that the valve on the oil tank #2 was faulty and had leaked approximately 10 gallons of oil. Although this leak occurred on 8/21/98, the faulty valve was not discovered until now. All other tanks are secure. Areas around the tanks were swept clean to determine if leaks or spills were prevalent.
- The solvent storage tanks were then examined for leaks or exposure. Upon closer examination, it was found that the number 1 tank was leaking a small amount of lubricant to the drainage system. This leak may be the reason for the high concentration of biochemical oxygen demand found in the sample taken from the storm water discharge. The tank was temporarily fixed to ensure that no further contamination would result. A replacement tank was ordered on 8/31/98, and was expected to arrive within five business days. The tanks shall be examined on a daily basis to further prevent possible exposure to the stormwater collection system and receiving stream.
- We inspected the fueling station to see if there were any leaks. The general area surrounding the fueling station was clean but we observed that gasoline and motor oil falls during fueling. In accordance with standard operating conditions, facility personnel hose down the area during vehicle washing and the drain is connected to the storm sewer. We detected this connection on 9/1/98 during one of the non-storm water discharge assessment visual inspections. Since this discharge is not allowed under our general permit, we are in the process of submitting a separate permit application specifically for the discharge of vehicle wash water to the municipal wastewater treatment plant.
- We examined the fueling station which is adjacent to the vehicle washing area. Vehicle washing cleaners are used here and any empty or open containers were removed from the area.
- We next looked at the loading and unloading docks where raw materials and various cleansers are delivered. The transfer of goods from incoming trucks to storage areas is a source of pollution. Although no problems were noticed, the pollution prevention team has developed a spill prevention and response plan to clean up spills quickly and report them if necessary. An overhead roof is planned in order to protect the loading and unloading of materials.

### **Describe existing management practices.**

Grass was lightly planted around the parking lot after recent construction. The fuel storage tank has curbing around it in accordance with our SPCC plan. Also, the maintenance crew regularly picks up trash and empty containers from around the storage tanks, loading and unloading areas, and the vehicle washing areas. Used oils are collected in containers and taken to a recycling facility. In addition, we installed two oil/water separators at the drains into our underground storm sewer leading to the Rocky River. These separators are indicated on the site map.

## A-B-C Metals

### Existing Monitoring Data

Although our NPDES permit for process wastewater does not require storm water sampling, we sampled our stormwater on one occasion in response to a questionnaire we received from the National Association of Metal Fabricators. They were collecting information to submit as part of their comments on EPA's proposed general permit.

Date of Sampling	8/30/98
Outfall Sampled	001
Type of Storm	1 inch light rainfall (lasted 2 days)
Type of Samples	Grab samples taken during first hour of flow

Data		
Parameter	Quantity	Sample Type
BOD	250 mg/l	Grab
TSS	100 mg/l	Grab
pH	7.2 s.u.	Grab
Oil and grease	5.0 mg/l	Grab

Based upon the high concentration of BOD in the stormwater samples collected, pollution prevention team is considering possible potential sources of BOD. We will look at storage areas housing oils, lubricants, acids, pesticides, and fertilizers.

## **A-B-C Metals**

### **Summary of Pollutant Sources**

October 1, 1998

Based on the site assessment inspection conducted on 8/30/98, the pollution prevention team identified four potential sources of pollutants:

- Oil and grease stains on the pavement in the fueling area indicate oil and grease may be picked up by stormwater draining to the storm sewer. This area drains into the storm sewer leading to the Rocky River.
- Sediment and erosion potential in the field below the employee parking lot because of thinly planted grass.
- Potential for spills or leaks from oil storage tanks, including the fuel storage tank, based on a spill that occurred on 5/10/98 and the leak that was detected in the oil storage tank. These pollutants would drain into the piped outfall into the Rocky River.
- Use of a toxic cleaning agent may result in a pollution problem if handled improperly.



**A-B-C Metals**  
**Description of Stormwater Management Measures Taken**  
**Based on Site Assessment Phase**

**October 1, 1998**

These measures correspond to the pollutant sources identified on the preceding page.

**Oil and grease from fueling area.**

We installed drip pads around the fuel pumps to pick up spilled gas and oil during truck refueling. These will be inspected regularly to make sure they are working well. Drip pads will be disposed of properly.

**Sediment and erosion in the field below the employee parking lot.**

We planted grass in this area to reduce potential for erosion.

**Leaks/spills from oil storage tanks.**

We are in the process of installing curbing around the outdoor oil storage tanks that will contain the volume of the largest tank in case a spill should occur. The spill response team has developed procedures to clean up this area should a spill occur. We are incorporating spill response procedures from our SPCC plan.

**Toxic cleaning agent.**

We have discontinued the use of this agent and are replacing it with a non-toxic cleaning agent.

# Pollutant Source Identification

**Worksheet #6**  
**Completed by:** John Smith  
**Title:** Plant Manager  
**Date:** September 3, 1998

**List all potential stormwater pollutants from materials handled, treated, or stored on-site.**

[illegible]

<b>Additional BMP Identification</b>		<b>Worksheet #7A</b> _____ <b>Completed by:</b> <u>John Smith</u> <b>Title:</b> <u>Plant Manager</u> <b>Date:</b> <u>September 3, 1998</u>	
Describe any treatment and innovative BMPs that are required to address existing and potential pollutant sources identified in Worksheet 3, 4, and 5. These are BMPs needed to prevent the discharge of significant amounts of pollutants despite implementation of operational and source control BMPs.			
<b>BMPs</b>	<b>Brief Description of Activities or Improvements</b>		
<b>Additional BMPs</b>	Order non-toxic cleaning agent.		
<b>Innovative BMPs</b>			

Minimum BMP Identification		Worksheet #7 _____
		Completed by: John Smith _____
		Title: Plant Manager _____
		Date: September 3, 1998 _____
Describe the BMPs that are needed for the facility to address existing and potential pollutant sources identified in Worksheets #3, 4, and 5. The description shall include the following minimum requirements.		
BMPs	Brief Description of Activities or Improvements	
Good Housekeeping	Collect and recycle used oil; regular trash pickup; train staff in basic cleanup procedures (sweeping loading & unloading areas, etc.)	
Preventive Maintenance	Daily inspection of outside oil tanks; replace faulty valve on oil tank #2; replace leaking oil tank #1.	
Spill Prevention & Emergency Cleanup	Install curbing around outside oil storage tanks; fuel tank has curbing, install drip pads at fueling station.	

BMPs	Description of Action(s) Required for Implementation	Schedule Milestone and Completion Date(s)	Person Responsible for Action
Source Control BMPs	1.		
	2.		
	3		
	4.		
	5.		
	6.		
Erosion & Sediment Control	1. Plant grass around new parking area.		
	2.		
	3.		
Management of Runoff  Innovative BMPs	1. Grassed swales along Wonka Drive, (2) oil/water separators in storm drain system		
	2.		
	3.		
	1.		
	2.		
	3.		
	4.		

## **A-B-C Metals Employee Training Program**

Who: Line Workers  
Maintenance Crew  
Shipping and Receiving Crew

When: Employee meetings held the first Monday of each month to discuss:

- Any environmental/health and safety incidents
- Upcoming training sessions
- Brief reminders on good housekeeping, spill prevention and response procedures, and material handling practices.
- Announce any changes to the plan
- Announce any new management practices

In-depth pollution prevention training for new employees

Refresher courses held every 6 months (October and March) addressing:

- Good housekeeping
- Spill prevention and response procedures
- Materials handling and storage

Employee Training Program Topics:

### Good Housekeeping

- Review and demonstrate basic cleanup (sweeping and vacuuming) procedures.
- Clearly indicate proper disposal locations and review recycling program.
- Post signs in materials handling areas reminding staff of good housekeeping procedures.
- Be sure employees know where routine clean-up equipment is located.

### Spill Prevention and Response

- Clearly identify potential spill areas and drainage routes
- Familiarize employees with past spill events – why they happened and the environmental impact (use slides)
- Post warning signs in spill areas with emergency contacts and telephone numbers
- Introduce Isaac Feldman as the Spill Response Coordinator and introduce his “team”
- Drill on spill clean-up procedures
- Post the locations of spill clean-up equipment and the persons responsible for operating the equipment

### Materials Handling and Storage

- Be sure employees are aware which materials are hazardous and where those materials are stored
- Point out container labels
- Tell employees to use the oldest materials first
- Explain recycling practices
- Demonstrate how valves are tightly closed and how drums should be sealed
- Show how to fuel vehicles and avoid “topping off”
- Remind employees to use drip pans in fueling area

<b>BMP Implementation</b>		<b>Worksheet #8</b>	
		<b>Completed by:</b> <u>Cheryl Glenn</u>	
		<b>Title:</b> <u>Plant Manager</u>	
		<b>Date:</b> <u>September 3, 1998</u>	
Develop a plan for implementing each BMP. Describe the steps necessary to implement the BMP (i.e., any construction or design), the schedule for completing those steps (list dates) and the person(s) responsible for implementation..			
<b>BMPs</b>	<b>Description of Action(s) Required for Implementation</b>	<b>Schedule Milestone and Completion Date(s)</b>	<b>Person Responsible for Action</b>
<b>Good Housekeeping</b>	1. Develop training program	9/6/98	Glenn
	2. Conduct training	9/25/98	Glenn
	3.		
<b>Preventive Maintenance</b>	1. Replace valve on oil tank #2	8/30/98	Feldman
	2. Install new oil tank #2	9/10/98	Feldman
	3.		
	4.		
<b>Spill Prevention &amp; Emergency Cleanup</b>	1. Install curbing around oil storage tanks	9/20/98	Meyers
	2. Install drip pads	9/30/98	Feldman
	3. Develop/implement spill prevention/response training	8/10/98 – Develop; 8/20/98 - Train	Feldman
<b>Inspections</b>	1. Develop inspections schedule	9/15/98	Glenn
	2.		



Employee Training		Worksheet #9	
		Completed by: <u>CHERYL GLENN</u>	
		Title: <u>PLANT MANAGER</u>	
		Date: <u>SEPTEMBER 3, 1998</u>	
Describe the annual training of employees on the SWPPP, addressing spill response, good housekeeping, and material management practices.			
Training Topics	Brief Description of Training Program/Materials (e.g., film, newsletter course)	Schedule for Training (list dates)	Attendees
Spill Prevention and Response	Locate spill areas by signs; drill spill response procedures; show slides of past spills.	October/March	Maintenance/shipping & receiving
Good Housekeeping	Demonstration; post signs at disposal sites.	October/March	Maintenance/shipping & receiving
Material Management Practices	Introduce hazardous materials labels; discuss recycling.	October/March	Line workers/shipping and receiving/maintenance
Other Topics	Environmental/health incidents; reminders of pollution prevention plan issues.	1 <sup>st</sup> Monday of each month	All employees.
Communication Channels			



# **Blank Forms for Development of the Stormwater Pollution Plan**

(Note: Use these forms or create your own.)



<b>Pollution Prevention Team</b>	<b>Worksheet #1</b> <b>Completed by:</b> _____ <b>Title:</b> _____ <b>Date:</b> _____
<div>Responsible Official: _____ Title: _____</div> <div>Team Leader: _____ Office Phone: _____</div> <div>Responsibilities: _____</div> <div>_____</div> <div>_____</div> <div>_____</div>	
<div>(1) _____ Title: _____</div> <div>Office Phone: _____</div> <div>Responsibilities: _____</div> <div>_____</div> <div>_____</div> <div>_____</div>	
<div>(2) _____ Title: _____</div> <div>Office Phone: _____</div> <div>Responsibilities: _____</div> <div>_____</div> <div>_____</div> <div>_____</div>	
<div>(3) _____ Title: _____</div> <div>Office Phone: _____</div> <div>Responsibilities: _____</div> <div>_____</div> <div>_____</div> <div>_____</div>	
<div>(4) _____ Title: _____</div> <div>Office Phone: _____</div> <div>Responsibilities: _____</div> <div>_____</div> <div>_____</div> <div>_____</div>	
<div>(5) _____ Title: _____</div> <div>Office Phone: _____</div> <div>Responsibilities: _____</div> <div>_____</div> <div>_____</div> <div>_____</div>	



**Worksheet #2**  
**Completed by:** \_\_\_\_\_  
**Title:** \_\_\_\_\_  
**Date:** \_\_\_\_\_

**Worksheet #2**  
**Completed by:** \_\_\_\_\_  
**Title:** \_\_\_\_\_  
**Date:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Date:** \_\_\_\_\_

[illegible]









**Worksheet #3**  
**Completed by:**  
**Title:**  
**Date:**

**Completed by:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Date:** \_\_\_\_\_

[illegible]



<b>Worksheet #4</b>
<b>Completed by:</b> _____
<b>Title:</b> _____
<b>Date:</b> _____

Completed by: \_\_\_\_\_

**Title:** \_\_\_\_\_

Date: \_\_\_\_\_

[illegible]



<p><b>Identify Areas Associated With Industrial Activity</b></p>	Worksheet #5
	Completed by: _____
	Title: _____
	Date: _____

<p><b>Identify Areas Associated With Industrial Activity</b></p>	Worksheet #5
	Completed by: _____
	Title: _____
	Date: _____

<p><b>Identify Areas Associated With Industrial Activity</b></p>	Worksheet #5
	Completed by: _____
	Title: _____
	Date: _____

<p><b>Identify Areas Associated With Industrial Activity</b></p>	Worksheet #5
	Completed by: _____
	Title: _____
	Date: _____

<p><b>Identify Areas Associated With Industrial Activity</b></p>	Worksheet #5
	Completed by: _____
	Title: _____
	Date: _____

List areas and activities, not included on Worksheets 2, 2A, and 3, which may be sources of pollution. Discuss the potential of these areas and activities as potential pollutant sources and identify any pollutant that may be generated by that activity..

[illegible]





**Non-Stormwater Discharge  
Dry Weather (May to September 30)  
Assessment & Certification**

Worksheet #6 \_\_\_\_\_  
 Completed by: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Date: \_\_\_\_\_

The dry season inspection shall determine the presence of unpermitted non-stormwater discharges such as domestic wastewater, non-contact cooling water, or process wastewater (including *leachate*) to the *stormwater drainage system*.

Tests may include: visual observations of flows, odors, and other abnormal conditions; dye tests, television line surveys; and/or analysis and validation of accurate piping schematics.

Date	Discharge Location (as indicated on the site map)	Method used to test or Evaluate Discharge	Describe Results from Test for Presence of Non-Stormwater Discharge	Identify Potential Significant Sources	Person who Conducted The Test

**CERTIFICATION**

*Based on my inquiry of the person or persons who manage the systems or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

A. Name & Title

B. Phone:

C. Signature

D. Date Signed



**Non-Stormwater Discharge  
Assessment & Failure To Certify  
Notification**

Worksheet #7 \_\_\_\_\_  
Completed by: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

If you cannot feasible evaluate the entire stormwater drainage system, fill in the table below with the appropriate information and sign this form to certify the accuracy of the included information.

List all outfalls or storm drains tested or evaluated, describe any potential sources of non-stormwater pollution from listed outfalls or drains, and state the reason(s) why certification is not possible. Use the key from your site map to identify each outfall..

Identify Discharge Location Not Tested/Evaluated	Description of Why Certification is Infeasible	Description of Potential Sources of Non-Stormwater Pollution

**CERTIFICATION**

*Based on my inquiry of the person or persons who manage the systems or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

A. Name & Title

B. Phone:

C. Signature

D. Date Signed



**Minimum BMP Identification**

Worksheet #8 \_\_\_\_\_

Completed by: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Describe the BMPs that are needed for the facility to address existing and potential pollutant sources identified in Worksheets #3, 4, and 5. The description shall include the following minimum requirements.

BMPs	Brief Description of Activities or Improvements
Good Housekeeping	
Preventive Maintenance	
Spill Prevention & Emergency Cleanup	

BMPs	Brief Description of Activities or Improvements
Inspections	
Source Control BMPs	
Erosion & Sediment Control BMPs (if applicable)	

### Additional BMP Identification

Worksheet #8A \_\_\_\_\_

Completed by: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Describe any treatment and innovative BMPs that are required to address existing and potential pollutant sources identified in Worksheet 3, 4, and 5. These are BMPs needed to prevent the discharge of significant amounts of pollutants despite implementation of operational and source control BMPs.

#### BMPs

#### Brief Description of Activities or Improvements

Treatment BMPs

Innovative BMPs





BMP Implementation		Worksheet #9 Completed by: _____ Title: _____ Date: _____	
Develop a plan for implementing each BMP. Describe the steps necessary to implement the BMP (i.e., any construction or design), the schedule for completing those steps (list dates) and the person(s) responsible for implementation..			
BMPs	Description of Action(s) Required for Implementation	Schedule Milestone and Completion Date(s)	Person Responsible for Action
Good Housekeeping	1. _____	_____	_____
	2. _____	_____	_____
	3. _____	_____	_____
	4. _____	_____	_____
	5. _____	_____	_____
Preventive Maintenance	1. _____	_____	_____
	2. _____	_____	_____
	3. _____	_____	_____
	4. _____	_____	_____
Spill Prevention & Emergency Cleanup	1. _____	_____	_____
	2. _____	_____	_____
	3. _____	_____	_____
Inspections	1. _____	_____	_____
	2. _____	_____	_____
	3. _____	_____	_____

BMPs	Description of Action(s) Required for Implementation	Schedule Milestone and Completion Date(s)	Person Responsible for Action
Source Control BMPs	1.		
	2.		
	3.		
	4.		
	5.		
	6.		
	7.		
	8.		
Erosion & Sediment Control	1.		
	2.		
	3.		
	4.		
Treatment BMPs	1.		
	2.		
	3.		
	4.		
Innovative BMPs	1.		
	2.		
	3.		
	4.		

Employee Training		Worksheet #10 _____ Completed by: _____ Title: _____ Date: _____	
Describe the annual training of employees on the SWPPP, addressing spill response, good housekeeping, and material management practices.			
Training Topics	Brief Description of Training Program/Materials (e.g., film, newsletter course)	Schedule for Training (list dates)	Attendees
Spill Prevention and Response			
Good Housekeeping			
Material Management Practices			
Other Topics			
Communication Channels			



## Reference Section

*This section includes:*

- Discussion Checklist
- Additional Best Management Practices (BMPs)
- Water Quality Regulations
  - Chapter 90.48 RCW, Water Pollution Control
  - Chapter 173-200 WAC, Water Quality Standards for Ground Water
  - Chapter 173-201A, Water Quality Standards for Surface Waters
- Monitoring Storm Water Discharges
- Stormwater Sampling Guidance
- Accredited Laboratories
- Administrative Requirements for SWPPP
- Changing Ownership or Ceasing Operation
- Transfer of Ownership Form
- Ecology Contacts

### Discussion Checklist

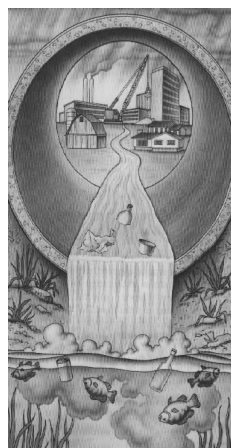


#### **Checklist of Hints Where Stormwater Pollution May Occur on an Industrial Site**

*(This checklist is for discussion purposes, and to assist facility management to assign duties to the pollution prevention planning team members, if applicable; and to assist the members to narrow down the potential pollution areas on site. Refer to the general stormwater permit, starting on page 16, for further clarification on what should be included in the stormwater pollution prevention plan.)*

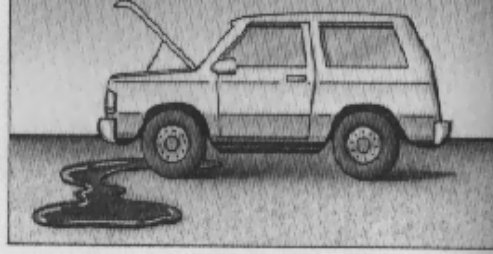
#### **What to look for:**

- Are there storm drains, culverts, or ditches leading off-site? Where do they drain to? What is the name(s) of the receiving waters? Also include discharges to ground. (If possible, check immediately after a storm when the water is flowing. Check the runoff for discoloration, turbidity, or oil sheens.)



- Always check outfalls and ditches for discoloration, oil sheens, odors, sedimentation, or other abnormal conditions. Downslope areas should also be checked for gully erosion caused by erosive flows.
- Check outfalls, catch basins, drains, and ditches to determine if there are flows in them that **should not** be there, such as floor drains tied into a storm drainage system. A good time to determine if there are non stormwater discharges is during the **dry season**. Dye tests also help to determine whether the piping system at the facility is accurate. If floor drains are not in use, they should be plugged.
- Are there encroachment areas (e.g., parking, paving, mowing, dumping of trash or grass clippings) which may impact the natural buffer areas to the surrounding waterbodies (including wetlands)?

- Are there areas where adjacent off-site stormwater enters your property? Is there a chance that run-on from those areas may carry pollutants onto your site? (What corrective measures can you implement to redirect the run-on to your site?)



- Are there a lot of cars, trucks, and equipment use at the site? Is there vehicle and/or equipment maintenance (including repair of the equipment)?
- Is there evidence that spills have occurred (for example, leaking dumpster(s), oil spots, staining, especially around the storm drains)?
- Is there a regular maintenance schedule for cleaning out the catch basins on-site? Have the catch basins been cleaned out, or is there litter and debris plugging the grate, or a sheen of oil on the sump surface?



bark, compost, scrap materials,, pallets, grit, deicing salt, raw materials, recycle materials, etc. that are uncovered and exposed to stormwater or snowmelt?

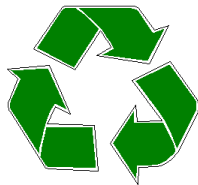
- Are curb cuts blocked from draining by sediment, litter, or vegetation?

- Does the paved areas need sweeping?
- Is there stockpiles of

- Are the catch basins stenciled with “Dump No Waste” messages?
- Is there an oil/water separator of any type installed for your facility? Is there a regular maintenance schedule for the separator? Do you discharge detergents to the oil/water separator?
- Do you have vehicle or equipment washing or steam cleaning on site? Is there a designated area for this activity? Does the wash water discharge to the sanitary sewer or a dead end sump; or does the water discharge to the storm drain? (Sending the wash water to the storm drain is not allowed.)
- If applicable, is the vegetation in ditches and ponds cut and maintained? Are the clippings properly disposed of?
  - Are there any bare, unvegetated areas or obvious erosion on site?
  - Is petroleum products stored or transferred on site (includes heating oils)?
- Do the dumpster(s) have a lid (that is left closed when not in use) and sealed bottoms to prevent leakage of waste materials? Or, are the dumpsters housed in a roofed area to prevent rain from entering?
- Is there a “emergency spill kit” easily available? Are the employees trained on what to do with the spilled material during the cleanup process? Are the spill incidents documented? For major spills, do the employees realize that the incident must be reported to the Department of Ecology, the Environmental Protection Agency, and the local sewer authority if there is an impact to their drainage system?



- Are empty containers covered or turned upside down?
- Are containers clearly labeled?
- Are drums, which are stored outside, stored properly with lids to prevent them from filling up with rain?
- Is there a containment mechanism to prevent spills from escaping such as a berm or double-walled containers?
- Is rain prevented from running into the containment or loading areas?
- Are the outside drains protected from spills or leaks?



least a four foot overhang, and paved with Portland cement? Is the paved area designed so it slopes to a containment area for any accidental spills or runoff? Is the perimeter of the fuel area bermed to prevent run-on of stormwater?



housekeeping practices, preventative maintenance, spill control, and routine inspections?

- Is there a recycling program in force at your facility?
- Do you have a fueling area? Is it covered with at

- Are the employees in the industrial area trained in good

- Are the landscaped areas maintained properly to prevent nutrients (fertilizers, grass clippings, etc.), pesticides, and fecal coliform bacteria (through animal waste) from entering the stormwater runoff? If litter is allowed to accumulate, it can impede the drainage of the stormwater. Check the settings on the sprinkler system regularly to help control runoff of the previously mentioned pollutants to the stormwater.



- Do you have a stormwater detention pond on site?
- Does the pond need enlarging in order to increase the settling time for sediment?
- Does baffles or vegetation need to be implemented to slow down the time it takes stormwater to enter the pond? Consider installing a grassy swale in the pond to route low flows through.
- Consider installing a forebay in part of the pond which will trap the majority of the runoff from smaller storms.
- Consider reducing the outlet size to increase the detention time (if the current pond can hold the increased volume). This will increase the settling time for sediment.
- Consider installing catch basin filters to trap sediment, oils, and grease. Many types are available. Reminder: The filters are only effective if they are maintained on a regular basis. There are other types of filters, such as sand or sand-peat filters, for installation under paved or landscaped areas.

## ADDITIONAL BEST MANAGEMENT PRACTICES (BMPs)

### Source Control Best Management Practices -- Required (Excerpts from Stormwater Management Manual for the Puget Sound)

- BMP S1.10 Fueling Stations
- BMP S1.20 Vehicle/Equipment Washing and Steam Cleaning
- BMP S1.30 Loading and Unloading Liquid Materials
- BMP S1.40 Liquid Storage in Above-Ground Tanks
- BMP S1.50 Container Storage of Liquids, Food Wastes, or Dangerous Wastes
- BMP S1.60 Outside Storage of Raw Materials, By-Products, or Finished Products
- BMP S1.70 Outside Manufacturing Activities
- BMP S1.80 Emergency Spill Cleanup Plans
- BMP S1.90 Vegetation Management/Integrated Pest Management
- BMP S2.00 Maintenance of Storm Drainage Facilities

### Source Control Best Management Practices (BMPs)

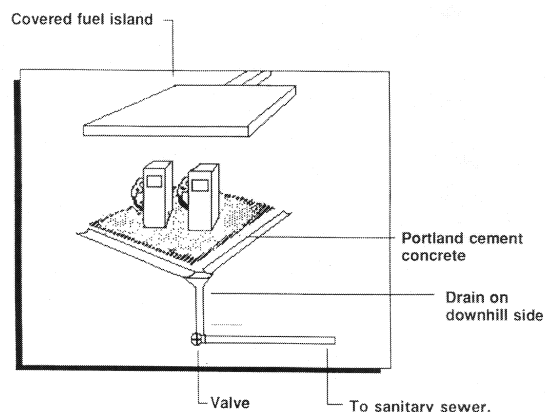
Source control BMPs are the only BMPs which are 100% effective. If a pollutant never gets into runoff, then it never has to be taken out. As a general rule, consider the following steps:

1. Alter the pollutant source activity to prevent release.
2. Enclose, cover, or contain an activity.
3. Provide containment for control of leaks and spills.
4. Discharge **contaminated** stormwater to a sanitary sewer or process water treatment.

If it is too expensive to enclose an entire area, then perhaps the activity can be covered with a frame and a roof. The covered area should have an impervious (hard) surface and drained to a sanitary sewer, process treatment, or to a dead-end sump according to either local sewer authority or other permit requirements.

#### BMP S1.10 Fueling Stations

Construction firms, warehouses, facilities with fleet vehicles, ports, and industrial complexes are examples of operations that may have fueling stations. Sometimes mobile fueling equipment is used at larger industrial complexes. Fuels contain organic compounds and metals that adversely affect the environment (aquatic life). The following BMPs are required for fueling activity:



*Roofed facility with drip line  
outside of perimeter strip drain*



1. The fueling facility shall be built in compliance with the Uniform Fire Code and the National Electrical Code. The Uniform Fire Code and sewer district regulations are significant issues to review to assure compliance.
2. The fuel island shall be designed to contain fuel spills, and paved using **Portland cement** concrete. **Do not use asphalt** paving. The spill containment pad shall be sized to prevent the **runoff** of spilled fuel, and the **runon** of stormwater from surrounding pavement.
3. Slope the pad so that liquids spilled on the fuel island can be collected in either trench drains or catchbasins that are connected to the sanitary sewer, process treatment or a dead-end sump. To be in compliance with the local sewer authority and the Uniform Fire Code, the drain(s) shall have a valve to allow shutoff in the event of a large fuel spill.
4. The fuel island shall be covered to prevent the direct entry of precipitation onto the spill containment pad. At a minimum, the roof/canopy shall cover the spill containment pad and, preferably, extend several additional feet to prevent windblown rain from entering.
5. Spills should be prevented whenever possible. An emergency spill cleanup plan should be implemented. Designate a responsible person(s) who are available on site or on call at all times. Suitable cleanup materials shall be kept on site to allow for prompt cleanup in case a spill occurs.
6. Train employees and educate customers on the proper use of fuel dispensers. Post signs in accordance with the Uniform Fire Code. Post “No Topping Off” signs (topping off gas tanks causes spillage and vents gas fumes into the air). Make sure the automatic shutoff on the gas nozzle works.
7. Temporary fuel tanks used to fuel vehicles in the field shall be placed in a bermed, impervious (hard surface) area; heavy mil plastic or Portland cement may be used for the temporary fuel tanks. The bermed area shall be large enough to contain the greater of: 10% of the total enclosed combined tank volume or 110 percent of the largest tank’s volume.

#### **Exceptions to the Above**

In industrial complexes or port facilities where very large mobile equipment is used, such as log loaders, the fuel island need not be covered. However, the pad must be designed in a manner that prevents the run-on of stormwater from adjacent areas. The pad must be designed in a manner that allows the collection of all rain that falls on the pad.

(See BMP S1.30 for transfer of fuels from a tanker to the fuel storage tanks and BMP S1.40 regarding the installation of tanks.)

## BMP S1.20 Vehicle/Equipment Washing and Steam Cleaning



Wash water from cleaning activities contains significant quantities of oil and grease, suspended solids, heavy metals, and organics, as well as pollutants from the detergents. **Do not** direct wash water that contains detergents to an oil/water separator. The oil/water separator will be **ineffective** because the surfactants in detergents chemically stabilize free and dispersed oil.

The following measures shall be followed when vehicle and/or equipment washing or steam cleaning is performed on site.



Washing of highway vehicles, equipment and parts, such as construction equipment, shall occur in a building or in a designated area as that described below. This requirement refers to all methods of washing in which water is used including low-pressure water, high-pressure water and steam.

## General Requirements

Wash water from vehicle and equipment cleaning shall be discharged to the **sanitary sewer**. All requirements of the local sewer authority and/or other permit requirements must be met prior to discharge. Conduct washing activity in one of the following locations **in order of preference**:

1. At a commercial washing business in which the washing occurs in an enclosure and drains to the sanitary sewer or;
2. Inside the facility's vehicle or equipment building which is plumbed to drain to the sanitary sewer or;
3. In an on-site building constructed specifically for washing of vehicles and equipment and is plumbed to drain to the sanitary sewer or;
4. In an outside area without walls and/or roof which has been designated as a wash area, and meeting the following requirements:

## Uncovered Wash Area Requirements

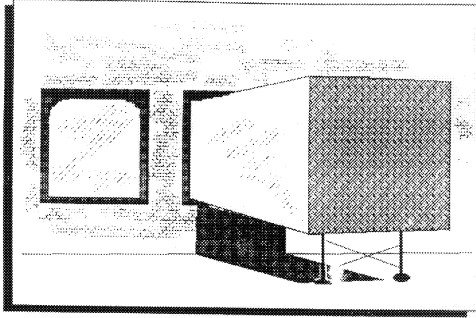
An uncovered wash area without walls is the least desirable option. Building roofs and walls prevent entry of precipitation, and walls contain the wash water. These standards are designed to prevent release of petroleum compounds and metals into the environment, and minimize the discharge of precipitation to the sanitary sewer. (To assist you in meeting state regulations, Ecology has a publication named "Vehicle and Equipment Washing Guidelines" available free of charge. Call the stormwater request line at (360) 407-7156 to request the guidance document.)

The following features shall be established for those choosing the uncovered wash area:

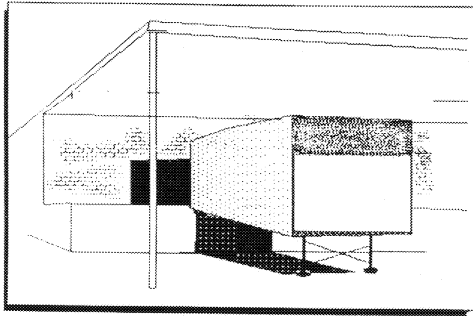
1. Paved, preferably with **Portland cement**, and constructed as a spill containment pad to prevent the run-on of stormwater from adjacent areas. The spill containment area shall be graded so that all water is collected in a containment pad drain system. The drain system may be perimeter drains, trench drains or catchment drains. The containment pad shall be sized to extend out a **minimum of four feet** on all sides of the vehicles and/or equipment being washed.
2. All wash water shall discharge to the sanitary sewer, process treatment or a dead-end sump. All requirements of the local sewer authority and/or other permit requirements must be met prior to discharge;
3. Treat the discharge by one of the following methods:
  - Pass through a spill control oil/water separator (SC-type) or an API or CPS oil/water separator as directed by the local sewer authority. A spill control (SC) type oil/water separator will protect against deliberate dumping of wash waters that contain detergents. A positive control valve is required (see item 4 below).
- Discharge to a containment sump with a positive control valve (item 4 below), live containment volume and overflow with oil/water separation. The minimum live storage volume shall be sized for the 6-month, 24-hour storm event for the area of the containment pad.
4. The discharge pipe shall have a positive control valve that is shut when washing is not occurring, thereby preventing the entry of stormwater. This valve may be manually operated but a pneumatic or electric valve system is preferable. Signs shall be posted to inform people of the operation and purpose of the valve. The valve may be on a timer circuit; where it is opened upon completion of a wash cycle. The timer would then close the valve after the sump or separator is drained. The recommended time period for the timer would be the time required to drain the sump live storage at the design oil/water separator inflow rate from the sump.
5. In areas where the wash water cannot be discharged to a sanitary sewer, wash water should be collected in a dead-end sump, tank, or other device and transported to the nearest sanitary facility for proper disposal.
6. A Portland cement spill containment pad is recommended for **steam** cleaning.
7. The wash area shall be well marked. Included in the posting will be a statement forbidding the changing of oil in the wash area.

### BMP S1.30 Loading and Unloading Liquid Materials

Loading or unloading of liquids in containers, or direct liquid transfers, shall apply the following BMPs:



*Dock with Door Skirt*



*Dock with Overhang*

Loading and unloading of liquids should be consistent with the Uniform Fire Code requirements, and to the extent possible, should occur in the **manufacturing** building. This would allow for any spills that are not completely retained to be discharged to the sanitary sewer, process treatment or a dead-end sump consistent with local sewer authority and permit requirements.

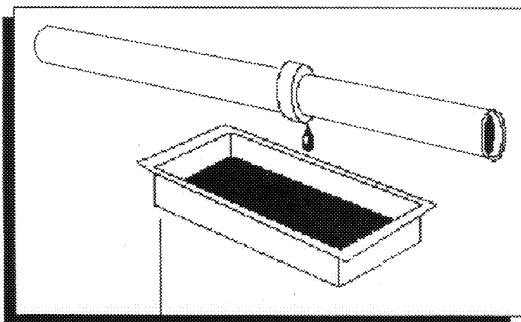
### Contained Liquids at Loading and Unloading Docks

1. Loading and unloading docks shall have overhangs or door skirts that enclose the trailer end.
2. The loading/unloading area is to be designed to prevent run-on of stormwater.
3. Materials for rapid cleanup of spills shall be retained on site.
4. An employee trained in spill containment and cleanup **shall be present** during loading/unloading activities.

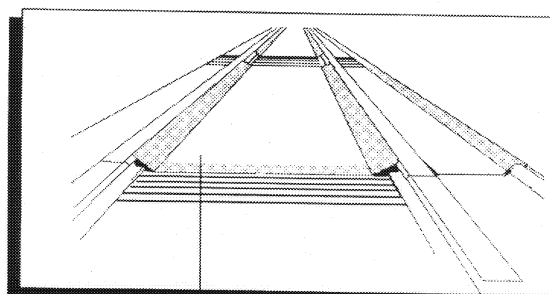
### Rail Transfer to Above/Below-Ground Storage Tanks

1. To minimize the risk of accidental spillage, a written “operations plan” that describes procedures for loading and/or unloading shall be posted and made available to employees. Employees shall be trained in its execution.
2. An Emergency Spill Cleanup Plan shall be developed. It may be part of the “operations plan” or a separate document. Employees shall be trained in the proper execution of the Spill Plan.
3. Drip pans shall be placed at locations where spillage may occur such as hose connections, hose reels, and filler nozzles. Drip pans shall **always** be used when making and breaking connections.
4. A drip pan system shall be installed between the rails to collect spillage from tank cars.
5. An employee trained in spill containment and cleanup shall be present during loading/unloading activities.

## Tanker Truck to Above/Below-Ground Storage Tanks



Drip pan



Drip pan  
within rails

1. To reduce the risk of spills, a written “operations plan” describing procedures for loading and/or unloading shall be implemented. Employees shall be trained in its execution.
2. The operations plan shall include an emergency spill cleanup plan. Cleanup materials shall be readily available and employees will be trained in their use.
3. The area on which the transfer takes place shall be paved. If the liquid is reactive to asphalt (for example, gasoline) **Portland cement** concrete shall be used to pave the area.
4. The transfer area shall be designed to prevent the run-on of stormwater from adjacent areas. The pad and surrounding area shall be sloped appropriately, or with a small,

flattened curb (like a small speed bump) around the “uphill” side of the transfer area;

5. Design and slope the transfer area so that runoff of any spilled liquids will discharge to a designated drain. The drain shall be connected to a dead-end sump or to the **sanitary sewer subject to the requirements of the local sewer authority and the Uniform Fire Codes**. A positive control valve shall be installed for discharges to the dead-end sump and the sanitary sewer.
6. If the transfer area is connected to the sanitary sewer, a spill containment sump should be installed between the spill containment pad and the sewer connection. The sump should be large enough to include 50 gallons of storage space, grit sedimentation volume and a manual drain shut-off valve. Post instructions on the proper use of the sump. Alternatively, an API or CPS oil/water separator that is sized for a 15 minute retention time at the greater flow rate of the:
 

Greatest fuel dispenser nozzle through-put rate of the peak flow rate of a 6-month storm event, and/or a 24-hour storm event over the surface of the containment pad.
7. Drip pans shall be placed at locations where spillage may occur, such as hose connections, hose reels, and filler nozzles. Drip pans shall always be used when making and breaking connections.

### **Loading and Unloading from or to Marine Vessels**

Facilities and procedures for the loading and unloading of petroleum products must comply with Coast Guard requirements.

### **BMP S1.40 Liquid Storage In Above-Ground Tanks**

Any facility which stores liquids in above-ground tanks shall comply with the following practices.

Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code. The following practices are to complement, not conflict with the Uniform Fire Code. Below-ground tanks shall comply with Ecology requirements.

#### **Permanent Tank Storage**

1. The tank shall include an overfill protection system to minimize the risk of spillage during loading.
2. Permanently installed tanks shall be surrounded by dikes. The dike shall be of sufficient height to provide a volume that is the greater of either 10% of the total enclosed tank volume or 110% of the volume contained in the largest tank.
3. The dikes and the surface within the dike area shall be sufficiently impervious to prevent loss of the stored material in the event of spillage.
4. Outlets from the tank area shall have positive control to prevent uncontrolled discharge from the tank area of spilled chemicals or petroleum products.

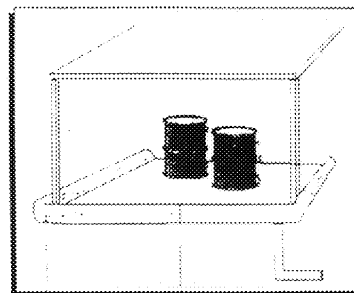
5. The outlet shall have a dead-end sump for the collection of small spills. It shall be **cleaned weekly** to minimize the potential for contamination of stormwater and/or ground water.
6. During the wet season (October 1-April 30) accumulated stormwater shall be released frequently.
7. For petroleum tank farms, the stormwater shall pass through an API or CPI-type oil/water separator.
8. If a tank is to be located in an area where firearms may be discharged, concrete encapsulation (or equivalent) should be used to protect the inner tank.
9. Tanks should be guarded against vehicles through the use of bollards or traffic barriers.
10. All installations shall be done per the Uniform Fire Code and the National Electric Code.
11. Double walled tanks do not need containment systems. All double-walled tanks should be UL approved.

#### **Small Portable Tank Storage**

Where portable, double-hulled tanks are used to contain fuels for servicing vehicles, a diking system as described above need not be used.

1. A secondary containment system (or equivalent) similar to that shown shall be used whenever liquids are temporarily stored in portable tank.

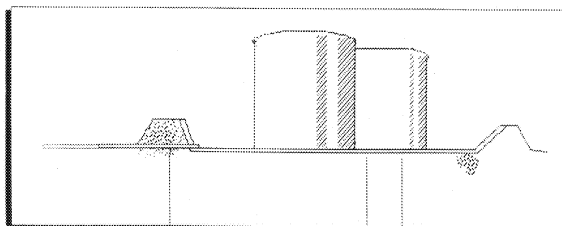
2. The containment system should be a bermed impervious area using either heavy mil plastic or Portland cement. The minimum storage volume shall be 100% of the total tank volume.
3. If a tank is to be located in an area where firearms may be discharged, concrete encapsulation (or equivalent) should be used to protect the inner tank.
4. All tank installations should be per the Uniform Fire Code and the National Electric Code.



The dike shall provide a volume that is the greater of either 10% of the total enclosed tank volume or 110% of the volume contained in the largest tank

Covered, designated area

### **BMP S1.50 Container Storage of Liquids, Food Wastes or Dangerous Waste**



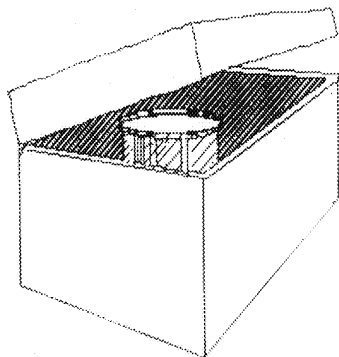
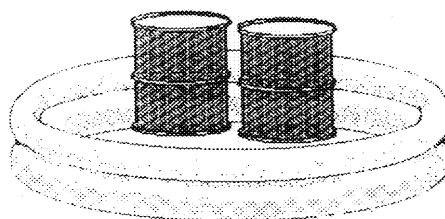
The dike shall provide a volume that is the greater of either 10% of the volume contained in the largest tank.

Impervious surface

Permanently installed tanks surrounded by dike system

A Container is any portable device in which material is stored. These practices apply to container(s) located outside a building used to temporarily store accumulated food wastes, vegetable or animal grease, used oil, liquid feedstock or cleaning chemical, or Dangerous Wastes (liquid or solid) unless the business is permitted by Ecology to store the wastes.

Temporary Drum Containment System



Container completely encloses storage tank

- Waste, food waste, or other liquids shall be kept inside a building unless this is impracticable due to site constraints or Uniform Fire Code requirements. If the containers are placed outside, the requirements of this BMP must be met.

- Dumpsters used to store items awaiting transfer to a landfill (such as used oil filters) shall be placed in a lean-to structure. Dumpsters shall be in good condition without corrosion or leaky seams.
- If waste container drums are stored above ground, they shall be kept in an area such as a service bay. If drums are kept outside, they must be stored in a lean-to type structure to keep rainfall from reaching the drums.
- Garbage dumpsters shall be replaced if they are deteriorating to the point where leakage is occurring. They shall be kept under cover to prevent the entry of stormwater.
- Portable tanks mounted on trailers shall have a drip pan. A roof over the portable tank shall have an overhang that extends past the edge of the drip pan. Include side panels to prevent crosswinds.

Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code. The following practices shall complement, not conflict, with current Uniform Fire Code requirements.

1. Containers shall be located in a designated area.
2. The designated area shall be paved, free of cracks and gaps and impervious in order to contain leaks and spills.
3. For liquid wastes, tanks shall be surrounded by dikes. The dike shall be of sufficient height to provide a volume that is the greater of either 10% of the total enclosed tank volume or 110% of the volume contained in the largest tank.

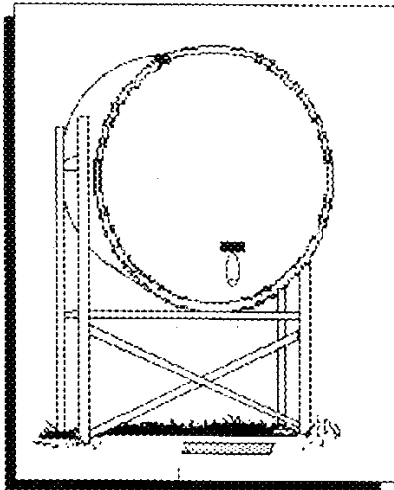
4. The designated area shall be covered.
5. The area inside the curb shall slope to a drain. If the material being stored is controlled by the Uniform Fire Code, or is used oil or Dangerous Waste a dead-end sump shall be installed.

For all other liquids the drain shall be tied to the sanitary sewer if available. Otherwise, process treatment or a dead-end sump shall be used subject to local Sewer Authority or permit requirements. The drain must have positive control (for example, a locked drainage valve or plug) to prevent release of contaminated liquids.

6. If the business is using roll-containers (for example, dumpsters) that are picked up directly by the collection truck, a filet can be placed on both sides of the curb to facilitate moving the dumpster.
7. Businesses accumulating Dangerous Wastes that do not contain free liquids need not carry out items #3 through #5 above if the designated area is sloped and the containers are elevated or otherwise protected from storm water run-on.
8. Where material is temporarily stored in drums, a containment system can be used as illustrated, in lieu of the above system. If a tank is to be located in an area where firearms may be discharged, concrete encapsulation (or equivalent) should be used to protect the inner tank.
9. Containers mounted for direct removal of a liquid chemical for use by employees must be placed inside a containment area as described above. A drip pan shall be used at all times.

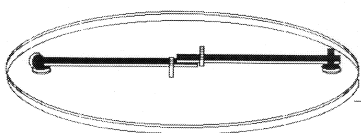


Mounted Container with Drip Pan



Mounted container with drip pan

10. Drums stored in an area where unauthorized persons may gain access must be secured in a manner that prevents accidental spillage, pilferage or any unauthorized use.
11. If the material is a Dangerous Waste, the business owner shall comply with any additional Ecology requirements not presented above.
12. If a storage area is to be used on-site for less than 30 days, a portable secondary system can be used in lieu of a permanent system as described above.
13. An employee trained in emergency spill cleanup procedures shall be present when Dangerous Wastes, liquid chemicals or other wastes are loaded or unloaded.



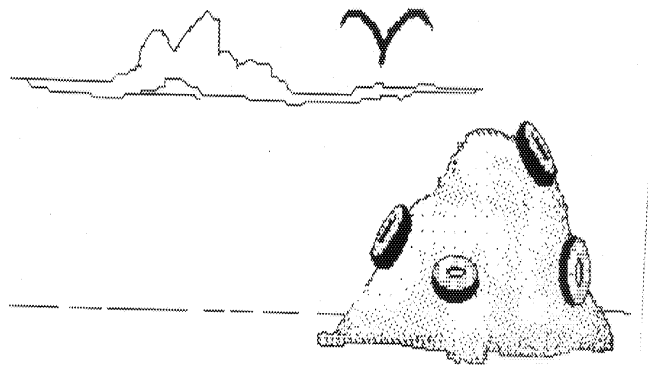
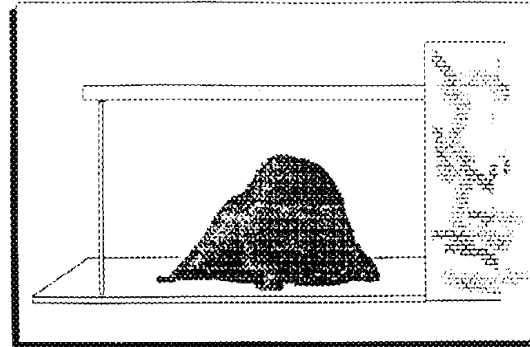
Lid

Locking System for Drum Lid

## BMP S1.60 Outside Storage of Raw Materials, By-Products or Finished Products

If the raw material, by-product or product is a liquid see the previous BMP. This section covers solid material.

Covered Storage Area for Raw Materials



Material Covered with Plastic Sheetting

This BMP is for:

1. Material such as gravel, sand, topsoil, compost, logs, sawdust, wood chips;
2. Lumber and other building materials;
3. Concrete and metal products.

The business shall select one of the following practices appropriate to the type of material.

1. Build a covered area. The area upon which the materials is stored shall be paved or;
2. Place temporary plastic sheeting over the material;
3. Pave the area and install a drainage system.

With option #3, the paved area shall be sloped in a manner that minimizes the pooling of water on the site, particularly with materials that may leach pollutants into stormwater and/or ground water such as compost, logs and wood chips. A minimum slope of 1.5 percent is recommended. Curbing shall be placed along the perimeter of the area to prevent the run-on of uncontaminated stormwater from adjacent areas as well as runoff of stormwater from the stockpile area.

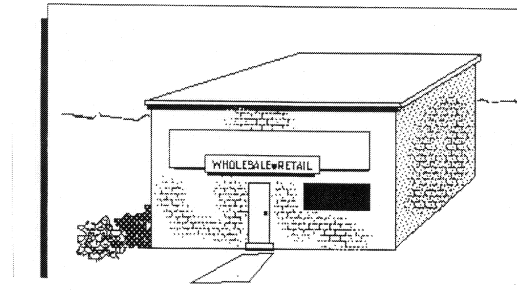
The storm drainage system shall be designed to minimize the use of catchbasins in the interior of the area, as they tend to rapidly fill with the manufacturing material. Rather, the area should be sloped to drain stormwater to the perimeter where it can be collected, or to internal drainage “alleyways” where material is not stockpiled.

## **BMP S1.70 Outside Manufacturing Activities**

### **Alter the activity**

The preferred option is to alter the activity so that pollutants are no longer discharged. If altering the practice will not significantly reduce the concentration of the pollutants, further actions as described below must be taken.

Enclose the Activity



### **Enclose the activity**

If possible, the manufacturing activity should be completely enclosed in a building and the floor drains connected to the sanitary sewer. The allowable concentration of pollutants is then specified by the local Sewer Authority. The area used may be so great as to make enclosure prohibitively expensive.

Costs of this BMP may be increased if the building code of the local jurisdiction requires a certain number of parking spaces be provided with a building even though its construction will not alter the nature of the manufacturing activity and therefore the number of employees.

## Cover the activity

The cost of a building can be significantly reduced by not covering the sides, thus eliminating the need for ventilating and lighting systems. Floor drains shall be connected to the sanitary sewer.

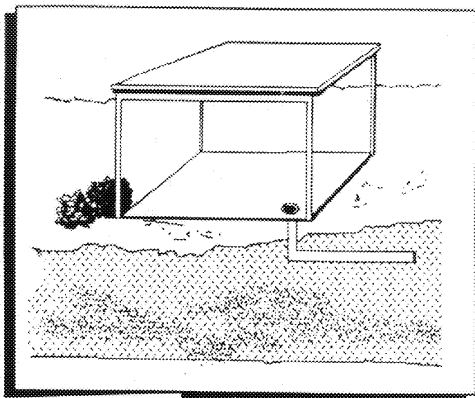
***If rejected asphalt is temporarily stored on-site before disposal, it shall be covered.***

## Segregate the activity

Certain parts of the activity may be the worst source of pollutants. Those parts can be segregated and enclosed or covered. Their drains can then be hooked to the sanitary sewer, process treatment or a dead-end sump depending upon available methods and applicable permit requirements.

A method commonly used in large industrial complexes where much of the process equipment is exposed is to place curbing around the immediate boundary of the individual processes. The storm drains from the interior areas discharge to the process wastewater treatment system.

## Discharge of high frequency storms to the public sanitary sewer



Cover the Activity

Businesses that utilize the public sanitary sewer system for their process or sanitary discharges may be able to utilize the public sewer for stormwater treatment under the following conditions.

If the segregated is very small (less than a hundred or so square feet), the local Sewer Authority may be willing to allow the area to remain uncovered with the drain connected to the sanitary sewer.

It may be possible under unusual circumstances to connect a much larger area to the sanitary sewer if the rate of stormwater discharge is matched to the capacity of the sewer. This approach will be limited to a small number of industries with outside activities that produce pollutants of particular concern.

Since the majority of the pollutants in stormwater are discharged over time by the small, high frequency storms, the excess runoff from the infrequent large storms can be bypassed to the storm drain. The sanitary sewer must have sufficient capacity to take a peak stormwater flow.

If the sewer does not have the capacity to handle the six-month storm peak-rate, a detention facility can be installed with a volume sufficient to reduce the peak rate to the capacity of the sewer.

Any discharge to a public sanitary sewer must meet the requirements of the local Sewer Authority.

To implement this BMP a hydraulic evaluation of the “downstream” sewer system shall occur in consultation with the local Sewer Authority.

## **Discharge to the facility's process wastewater treatment system**

Industries that generate large volumes of process wastewater typically have their own wastewater treatment system that discharges directly to the nearest receiving water. These industries shall have the discretion to use their own wastewater treatment system to treat stormwater within the constraints of their NPDES permit requirements for process treatment.

The industry may also choose to discharge the stormwater directly to its effluent outfall without treatment as long as the total loading of the discharge process water and stormwater does not exceed the loading had a stormwater treatment device been used. In effect, the allowable discharge of pollutants from the process wastewater treatment system is reduced. This option would be subject to permit constraints and, potentially, regular monitoring.

## **BMP S1.80 Emergency Spill Cleanup Plans**

Owners of facilities engaged in storing, processing, or refining oil and/or oil products are required by federal law to have a Spill Prevention and Control Plan (SPCC). Owners of businesses that produce dangerous wastes are required by state law to have a spill cleanup plan.

Facilities identified in the stormwater permit application, or those designated as a significant contributor of pollutants to stormwater, are required to have an Emergency Spill Cleanup Plan and shall follow these general guidelines in its preparation.

1. The first part of the plan shall contain a description of the facility including the owner's name and address, the nature of the facility activity and the general types of chemicals used in the facility.

2. The plan shall contain a site plan showing the location of storage areas for chemicals, the locations of storm drains, and the direction of slopes towards those drains, and the location and description of any devices to stop spills from leaving the site such as positive control valves.
3. The plan shall describe notification procedures to be used in the event of a spill, such as key personnel, and agencies such as Ecology and the local Sewer Authority.
4. The plan shall provide instructions regarding cleanup procedures.
5. The owner shall have a designated person with overall spill response cleanup responsibility.
6. Key personnel shall be trained in the use of this plan. All employees in the industrial area of the facility should have basic knowledge of spill control procedures.
7. A summary of the plan shall be written and posted at appropriate points in the building, identifying the spill cleanup coordinators, location of cleanup kits, and phone numbers of regulatory agencies to be contacted in the event of a spill.
8. Cleanup of spills shall begin immediately. No emulsifier or dispersant shall be used.
9. In fueling areas: absorbent should be packaged in small bags for easy use and small drums should be available for storage of absorbent and/or used absorbent.
10. Absorbent material shall not be washed down the floor drain or storm sewer.
11. Emergency spill containment and cleanup kit(s) shall be located at the facility site. The contents of the kit shall be appropriate to the type and quantities of chemical liquids stored at

the facility. The kit might contain appropriately lined drums, absorbent pads, and granular or powdered materials for neutralizing acids or alkaline liquids. Kits should be deployed in a manner that allows rapid access and use by employees. This plan shall be updated regularly.

12. Ecology and the local Sewer Authority shall be notified immediately if the spill may reach sanitary or storm sewers, or surface water.

### **BMP S1.90 Vegetation Management/ Integrated Pest Management**

Different types of vegetation management are used by facilities. They need to minimize the growth of vegetation in undesirable locations (such as utility corridors). Many facilities have at least a minimal amount of landscaping around their buildings that they wish to maintain.

Whether using herbicides to be rid of undesirable vegetation, pesticides to reduce pest infestations or fertilizers to promote vegetative growth, should implement these practices in an intelligent, environmentally sound fashion.

#### **Integrated pest management**

As used in BMP, pest is defined to mean any agent, whether insect, fungal, bacterial, or vegetation which causes damage or as in the case of weeds, is in the wrong place at the wrong time.

The term pesticide includes those chemicals commonly known as pesticides, rodenticides, fundicides, nematicides and herbicides unless other wise specifically indicated.

Integrated Pest Management (IPM) is a long-term, ecological approach to controlling pest populations. IPM maximizes reliance on natural pest

controls. Recognize that the non-economic consequences of pest control (and not just pesticide use) may be harmful to the environment, and so pesticide inputs should be reduced and natural controls maximized in order to minimize the environmental side effects.

Integrated control is a pest management system that utilizes all suitable techniques either to reduce pest populations and maintain them at levels below those causing economic injury, or to so manipulate the populations that they are prevented from causing such injury.

The major components of IPM are:

- Initial information gathering: The pest and/or problem needs to be identified. Information should be collected on the biology of the pest and its management, and previous methods used to manage the pest in the area. Records should be kept in some manner of on-going activities.
- Monitoring: Observe the plants or the site for potential pest problems at regular intervals. Each monitoring system needs to be tailored to the particular situation, and the level of effort should be appropriate to the amount of damage caused by the pest, the time available, and the skill level of the person making the inspections.
- Establishing injury levels: An injury or tolerance level is used to determine if the problem is serious enough to justify some kind of treatment. A trade-off needs to be made between the amount of damage done versus the cost of control. An injury level should be determined for each potential pest.
- Record-keeping: Records should be kept of what is seen, decisions made, actions taken, and results. Records are the memory of the systems. When personnel leave, their experience is lost if there are no records.

- Least-toxic treatments: Treatment strategies should be chosen that are the least disruptive of natural controls, least hazardous to human or non-target organisms health, least damaging to the general environment, the most likely to produce a permanent reduction in the environment's ability to support that pest, and the most cost-effective in the short and long term. The most energy and cost-effective pest management strategy in the long term is to redesign the system to eliminate the life support systems required by the pests.
- Evaluation and adjustment: Inspect after the treatment action has been taken. Has the treatment been worthwhile? How can the whole process be improved to achieve the overall objectives of the program?

Pesticides are used only where other techniques are not adequate or possible to use. Prevention is a major component of IPM and can be best addressed at the program design stage.

Scouting can regularly be done by work crews for insect and weed infestations so that some sort of early action can be taken. Prompt action against a pest before it becomes established means that less toxic methods of control such as hand weeding can be used instead of an herbicide or pesticide.

### **BMPs for the use of pesticides**

1. A pesticide-use plan should be formulated and shall include at a minimum: a list of selected pesticides and their specific uses; brands, formulations, application methods and quantities to be used; equipment use and maintenance procedures; safety, storage, and disposal methods; monitoring and record keeping procedures and public notice

procedures. All procedures shall conform to the requirements of Ch. 17.21 RCW and Ch. 16-228 WAC.

2. Any control used should be done at the life stage when the pest is most vulnerable. Once an application is made, its effectiveness should be evaluated so that future treatment can be more finely tuned.
3. The pesticide chosen shall be the least toxic pesticide available that is capable of reducing the infestation to acceptable levels. The pesticide should readily degrade in the environment and/or have properties that strongly bind it to soil particles.
4. Documented evidence shall be provided showing the inapplicability of available alternatives.
5. An annual evaluation procedure should be developed and include a review of the effectiveness of treatments, buffers and sensitive areas, public concerns and complaints, and recent toxicological information on pesticides used or proposed for use.
6. Pesticides shall not be sprayed within 100 feet of open waters including wetlands, ponds, streams, sloughs and any drainage ditch or channel that leads to open water.
7. If required or recommended by the local government, public posting of the area to be sprayed shall be done prior to the application. All sensitive areas including wells, creeks and wetlands shall be flagged prior to spraying and a buffer strip of approximately 100 feet shall be used.
8. Spray application shall not occur during weather conditions indicated in the applicable WACs.
9. Spreader/stickers used shall be the least toxic and/or most target specific available.

10. Apply the pesticide according to label directions. Pesticides should be mixed and equipment cleaned, **in an area where accidental spills will not enter surface or ground waters**, and will not contaminate the soil. Rinseate from equipment cleaning and/or triple-rinsing of pesticide containers should be used as product.
11. The application equipment used should be capable of immediate shutoff in the event of an emergency.

### Resources

Persons interested in finding out more information on IPM can contact the Bio-Integral Resource Center (BIRC), Post Office Box 7414, Berkeley, CA 94707. They publish a number of reports and a periodical, "IPM Practitioner."

The Department of Ecology publishes "Hazardous Waste Pesticides" (#89-41) which can help to determine if a particular pesticide is a dangerous waste, and includes information on pesticide waste reduction.

EPA publishes "Suspended, Cancelled and Restricted Pesticides" which lists all restricted pesticides and the specific uses which are allowed.

### **BMP S2.00 Maintenance of Storm Drainage Facilities**

Proper maintenance of public and private stormwater facilities is necessary to ensure they serve their intended function. Without adequate maintenance, sediment and other debris can quickly close facilities, making them useless. Rehabilitation of such facilities is expensive, and in the case of infiltration systems may be impossible. Polluted water and sediments removed during the cleaning operation **must be properly disposed of**.

### **Maintenance Standards**

1. Catchbasins, stormwater detention and treatment systems shall be inspected at least annually. A representative of the local government may also inspect private facilities at least annually.
2. Any deterioration threatening the structural integrity of the facilities shall be immediately repaired. These include such things as replacement of clean-out gates, catchbasin lids and rock in emergency spillways.
3. A catchbasin shall be cleaned if the depth of deposits are equal to or greater than one-third the depth from the basin to the invert of the lowest pipe into or out of the basin. If a catchbasin is found during the annual inspections to significantly exceed this standard, it shall be cleaned every six months. If woody debris is likely to accumulate in a catchbasin, it should be cleaned on a weekly basis.
4. Warning signs (e.g. "Dump No Waste - Drains to Ground Water," "Streams," "Lakes," etc.) shall be painted or embossed on or adjacent to all storm drain inlets. They shall be repainted as needed.
5. Debris shall be regularly removed from surface basins used for either peak rate control or stormwater treatment.
6. Parking lots shall be swept when necessary to remove debris.
7. Keep leaves off the gratings (particularly in the Fall) to help prevent local flooding and property damage.
8. Handling and disposal of debris (sediment, leaves, etc.) from clean-out of drainage systems shall be done in such a manner that does not cause degradation of water quality, and is prevented from re-entering the storm drainage system.





## **Excerpts from Stormwater Management Manual for the Puget Sound Basin**

- R.1 Stormwater Discharges to Public Sanitary Sewers, Septic Systems, Sumps and Process Treatment
- R.2 Uniform Fire Code Requirements
- R.3 Ecology Requirements for Generators of Dangerous Wastes
- R.4 Minimum Functional Standards for Containers
- R.5 Coast Guard Requirements for Marine Transfer of Petroleum Products
- R.6 USEPA Requirements for Underground Tank Storage
- R.7 USEPA/Ecology Emergency Spill Cleanup Requirements
- R.8 WSDA Pesticide Regulations
- R.9 Air Quality Regulations
- R.10 Ecology Waste Reduction Programs
- R.11 Washington State Ground Water Quality Standards
- R.12 Water Pollution Control Chapter 90.48 RCW
- R.13 Water Quality Standards for Ground Waters of the State of Washington Chapter 173.200 WAC
- R.14 Water Quality Standards for Surface Waters of the State of Washington Chapter 173.201A WAC

### **Stormwater Discharges to Public Sanitary Sewers, Septic Systems, Sumps and Process Treatment**

Discharging stormwater to a public sanitary sewer (BMP S1.70) requires approval of the local Sewer Authority if Ecology has delegated the authority to set pretreatment requirements. If it has not yet received such authority, the business or public agency that wishes to discharge stormwater to the sanitary sewer must obtain the approval of the Pretreatment Program administrator at the regional Ecology office.

In setting pretreatment requirements, the local Sewer Authority or Ecology must operate within State Regulations (ch. 173-216 WAC (State Waste Water Discharge Permit Program) which in turn must comply with Federal Regulations 40 CFR Part 403.5 (National Pretreatment).

Specific prohibitions include materials which:

1. Pass through the municipal treatment plant untreated or interfere with its operation;
2. Create a fire or explosion hazard, create a public nuisance or hazard to life, prevent entry into the sewer for maintenance and repair or is injurious in any other way to the operation of the system or the operating personnel;
3. Have a pH less than 5.0 or greater than 11.0 or have any corrosive property capable of causing damage or hazard to the system, equipment, or personnel;
4. Will cause obstruction to flows;

5. Will cause the sewage temperature to exceed 40°C or will in any case interfere with the biological activity in the municipal treatment plant.

Stormwater cannot be discharged to the sanitary sewer system except under extraordinary circumstances which are defined as the condition under which treatment by all known and available technology will not meet Ecology standards for discharge to receiving waters or will cause unreasonable financial burden. This can only be determined in consultation with Ecology.

The rate of stormwater entering the sanitary sewer cannot exceed the hydraulic capacity of the collection system or the treatment plant by the combined flow of sanitary sewage and stormwater.

The rate of stormwater entering the sanitary sewer cannot exceed the hydraulic capacity of the collection system or the treatment plant by the combined flow of sanitary sewage and stormwater.

The allowable concentrations of particular materials such as grease may vary with the particular sewer system, since the responsibility of setting such limits rests with the local Sewer Authority, if delegated that authority by Ecology, or by Ecology where that delegation has not occurred.

### **Process Treatment**

Process treatment may be used to dispose of polluted stormwater depending on the NPDES permit constraints of the particular facility. The total loading of discharged process treatment water and stormwater cannot exceed the loading had a stormwater treatment device been used.

### **Use of Dead-End Sumps**

Substance which cause a violation of water quality standards must not be discharged to a septic system, surface or ground water. Where either sewage systems or process wastewater treatment are not available, an alternative is the use of dead-end sump. Sumps are tanks with drains which can be periodically pumped and disposed of by an appropriate waste disposal operator. Depending on the composition of the waste, it may or may not be considered Dangerous Waste.

For more information on disposal requirements for sumps, see *Step by Step: Fact Sheet for Hazardous Waste Generators*, publication 91-12, available from Ecology's Public Information Office.

### **Uniform Fire Code Requirements**

Storage of flammable, ignitable and reactive chemicals and materials must comply with the stricter of: local zoning codes, local fire codes, the Uniform Fire Code, Uniform Fire Code standards or the National Electric Code.

References:

Uniform Fire Code, International Conference of Building Officials and the Western Fire Chiefs Association, ISSN 0-896-9736.

Uniform Fire Code Standards, National Fire Protection Association.

National Electric Code, National Fire Protection Association.

NPPA 30A Automotive and Marine Service Station Code, American National Standard Institute and the National Fire Protection Association.

## Ecology Requirements for Generators of Dangerous Waste

The State's Dangerous Waste Regulations (Chapter 173-303 WAC) cover accumulation, storage, transportation, treatment and disposal of Dangerous Wastes. Of interest to this manual are those businesses or public agencies that accumulate the waste at their building until taken from the site by a contract hauler. Consequently, only those aspects of the regulations that apply to waste generators and accumulation are considered here.

State regulations require generators of Dangerous Wastes to obtain an Ecology Identification Number if they generate more than 220 pounds per month (2.2 pounds if the waste is defined as Extremely Hazardous). In addition, under certain circumstances as described below the generator must obtain a permit to store Dangerous Wastes. Where storage permits are required Ecology has the responsibility of ensuring that technical requirements are met.

Local governments must be concerned about situations where an Ecology storage permit is not required (less than 220 pounds per month). Although these generators still fall under Ecology regulations, the technical requirements are general. The first opportunity for local government to enforce the regulations is when a generator requests a building permit.

A storage permit is not required by Ecology under the following circumstances:

1. If the business generates more than 2,200 pounds per month of Dangerous Waste but intends to store the accumulated material less than 90 days;
  2. If the business generates between 220 and 2,200 pounds per month of Dangerous Waste but intends to store less than 180 days; or,
  3. If the business produces less than 220 pounds per month regardless of the length of storage.
- Generators that produce more than 220 pounds per month (See 1 and 2 above) and avoid the need for a permit must still fulfill these general regulations with regard to temporary storage:**
- If Placed In Containers**
1. If the container is not in good condition (e.g. severe rusting, apparent structural defects) or if it begins to leak, the owner must replace the container.
  2. The container must be labeled as to its contents.
  3. The container must be lined with a material that does not react with the waste.
  4. The container must always be closed except when adding or removing waste.
  5. The container must not be opened, handled, or stored in a manner which may cause a rupture or leak.
  6. Examine the containers for leakage at least weekly.
  7. Containers storing reactive or ignitable waste must meet requirements of the Uniform Fire Code.
  8. Incompatible wastes must be stored separately.
  9. Ecology may require secondary containment of the storage area. Specifically, the storage area must:

- a. Be capable of collecting and holding spills and leaks;
- b. If uncovered, be capable of handling a 25-year storm;
- c. Have a base which is free of cracks or gaps and is sufficiently impervious to leaks, spills and rainfall;
- d. Be sloped or designed such that liquids can drain to a point for removal;
- e. Have positive drainage control (e.g. a valve) to ensure containment until any liquid is removed. Removal must occur in a timely manner;
- f. Have a holding capacity equal to 10 percent of the volume of all containers or 100 percent of the volume of the largest container whichever is greater;
- g. Not allow runoff of rainfall from areas adjacent to the storage area.

If the waste does not contain free liquids the above requirements need not be met provided that the area is sloped or the containers are elevated.

#### **If Placed In Tanks**

1. The tank must be lined with a material that does not react with the waste.
2. The tank, tank area, and its ancillary equipment must be inspected regularly according to a posted schedule.
3. If retired, the tank is to be cleaned of all contents. Any wash waters should be disposed of in a manner similar to the disposal of the actual wastes.
4. Tanks storing reactive or ignitable waste must meet the Uniform Fire Code requirements. Incompatible wastes must be stored separately.

The above generators must also have a designated employee on site or on call with the responsibility for coordinating all

emergency response measures. Any spills are to be contained and cleaned up as soon as practicable.

If the business produces less than 220<sup>1</sup> pounds per month it need not comply with the above regulations. It need only dispose of the waste in a manner acceptable to the local Health Department which is (generally):

1. Dispose of the waste to a permitted facility; or,
2. Dispose of the material to a recycling facility; or,
3. Dispose of the waste to a permitted municipal or industrial landfill.
4. Put the waste to a beneficial use, such as the use of sludge as fertilizer.

For more information on disposal requirements for solid and hazardous wastes, see *Step By Step: Fact Sheets for Hazardous Waste Generators*, publication 91-12, available from Ecology's Public Information Officer.

#### **Minimum Functional Standards for Containers**

The local health department or district establishes standards on the use and integrity of solid waste containers. These local regulations must meet or exceed the State Minimum Functional Standards, WAC 173-304-200, which state:

“Reusable containers, except for detachable containers, shall be: rigid and durable; corrosion resistant; nonabsorbent and water tight; rodent-proof and easily cleanable; equipped with a close fitting cover; suitable for handling with no sharp edges or other hazardous conditions....”

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<sup>1</sup> Some wastes are designated “Extremely Hazardous” in which case the above controls are imposed if more than 2.2 pounds are produced per month.

Detachable containers are reusable containers that are mechanically loaded or handled such as a dumpster or drop box.

“Detachable containers shall be durable, corrosion-resistant, nonabsorbent, nonleaking and having either a solid cover or screen cover to prevent littering.”

Other relevant requirements include:

“All persons collecting or transporting solid wastes shall avoid littering, or the creation of other nuisances at the loading point...”

“...solid waste shall be moved in such a manner that the contents will not fall, leak in quantities to cause a nuisance, or spill therefrom. Where such spillage or leakage does occur, the waste shall be picked up immediately...”

### **Coast Guard Requirements for Marine Transfer of Petroleum Products**

Federal regulations 33 CFR Parts 153, 154 and 155 cover, respectively, general requirements on spill response, spill prevention at marine transfer facilities, and spill prevention for vessels.

These regulations specify technical requirements for transfer hoses, loading arms, closure and monitoring devices. The regulations also cover small discharge containment: they require the use of “fixed catchments, curbing, and other fixed means” at each hose handling and loading arm area, and each hose connection manifold area. Portable containment means can be used in exceptional situations where fixed means are not feasible.

The capacity of the containment area varies from the volume of 1 to 4 barrels depending on the size of the transfer hoses.

The regulations also require an operations plan and specifies its general contents. The plan shall describe the responsibilities of personnel, nature of the facility, hours of operation, sizes and numbers of vessels using the facility, nature of the cargo, procedures if spills occur, and petroleum transfer procedures. The plan must also include a description and location of equipment for monitoring, containment, and fire fighting.

See also, *NFPA 30A Automotive and Marine Service Station Code*, American National Standard Institute and the National Fire Protection Association.

## **USEPA Requirements for Underground Tank Storage**

### **Exempt Tanks**

Regulations are for underground tanks (tank systems having 10 percent or more of their volume underground) containing petroleum or listed hazardous substances. It covers all tanks except:

1. Farm and residential tanks holding 1,100 gallons or less of motor fuel;
2. Tanks storing heating oil used on premises;
3. Tanks on or above the floor of underground areas;
4. Septic tanks
5. Tanks holding 110 gallons or less;
6. Emergency spill and overflow tanks.

### **New Requirements for Tanks (Installed After December 1988)**

1. Certify that the tank and piping are installed properly according to industry codes;
2. Equip with devices that prevent spills and overfills;

3. Protect tank and piping from corrosion;
4. Equip the tank and piping with leak detection.

### **Requirements for Existing Tanks (Installed before December 1988)**

1. Equip with leak detection by these dates:

If Tank was installed	Leak detection by
Before 1965	1989
1965-1969	1990
1970-1974	1991
1975-1979	1992
1980 to December 1988	1993

2. Implement tank filling procedures that will prevent spills and overfills.
3. By December 1998, tanks and piping shall be equipped with corrosion prevention; if the tank does not have corrosion protection or an internal lining and devices to prevent spills and overflow, a monthly inventory with tightness testing is required until December 1998.
4. By December 1998, equip to prevent spills and overfills.
5. Leak detection in piping shall be installed by December 1990.

Pressure piping: devices to automatically shut off or restrict flow or have an alarm that indicates leak. Conduct annual tightness testing or use monthly monitoring methods for tanks.

Solution piping: Monthly monitoring or tightness testing shall be done every three years on the same schedule as leak detection. If suction piping is sloped to draw back to storage tank when suction is released and only one check valve is included in each suction line directly below the suction pump then leak detection is not required.

6. If the existing tank has been upgraded with corrosion protection and a device to

prevent spills and overfills, then a monthly inventory control and tank tightness test must be performed every 5 years. If the tank has not been upgraded, a monthly inventory control and tank tightness test must be performed every year.

### **Reporting Requirements**

1. Notification of installation of tank and/or any suspected releases.
2. Confirmed release/corrective action.
3. Notification 30 days before permanent closure.

### **Reporting of Suspected Releases**

Owners/operators must report the leak within 24 hours, and follow the procedures outlined in the regulations for any of the following:

1. Discovery of release at the tank site or the surrounding area.
2. Unusual operating conditions such as sudden loss of product, equipment behavior, unexplained water in tank.
3. Monitoring results indicating a release may have occurred unless the monitoring device was found to be defective or, in the case of inventory control, if the second month does not confirm initial data.

### **Record Keeping Requirements**

1. Records of leak detection performance and maintenance; previous year monitoring results and most recent tightness test results, including:
  - a. Leak detection manufacturing performance claims;
  - b. Records of maintenance, repair; and,
  - c. Calibration of leak detection.

2. Records of the last two corrosion protection system inspections.
3. Expert analysis of corrosion potential if corrosion protection equipment is not used.
4. Records of site assessment results are required when permanent closure occurs. Records shall be kept a minimum of three years after closure.
5. Records for repaired or upgraded tanks.
6. Check local regulatory requirements.

## **USEPA/Ecology Emergency Spill Cleanup Requirements**

### **USEPA - SPCC Plans (40 CFR Part 112)**

Federal Regulations require that owners or operators of facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, or consuming oil and oil products are required to have a Spill Prevention and Control Plan (SPCC), provided that the facility is non-transportation related; and, that the above-ground storage of a single container is non-transportation related; and, that the above-ground storage of a single container is in excess of 660 gallons, or an aggregate capacity greater than 1,320 gallons, or a total below-ground capacity in excess of 42,000 gallons.

The Plan must:

1. Be well thought out in accordance with good engineering;
2. Achieve three objectives - prevent spills, contain a spill that occurs, and clean up the spill.
3. Identify the name, location, owner, and type of facility;
4. Include the date of initial operation and oil spill history;
5. Name the designated person responsible;

6. Show evidence of approval and certification by the person in authority;
7. Contain a facility analysis.

### **Ecology Dangerous Wastes (WAC 173-303-350)**

Generators must have a Contingency Plan which must include:

1. Actions to be taken in the event of spill;
2. Descriptions of arrangements with local agencies;
3. The name of the owner's Emergency Coordinator;
4. A list of emergency equipment available;
5. An evaluation plan for business personnel.

For more information on disposal requirements for solid and hazardous wastes, see *Step by Step: Fact Sheets for Hazardous Waste Generators*, publication 91-12, available from Ecology's Public Information Office.

### **Washington State Department of Agriculture (WSDA)**

Washington State pesticide laws are administered by the Department of Agriculture (WSDA), under the Washington Pesticide Control Act (Ch. 15.58 RCW), Washington Pesticide Application Act (Ch. 17.21 RCW), and regulations under Ch. 16-228 WAC. The requirements relevant to water quality protection are:

1. Persons who apply pesticides are required to be licensed except:
  - a. people who use general-use pesticides on their own or their employer's property;
  - b. grounds maintenance people using only general-use pesticides on an occasional basis not amounting to a regular occupation;

- c. governmental employees who apply general-use pesticides without utilizing any kind of motorized or pressurized apparatus;
  - d. employees of a commercial applicator or a government agency who are under direct on-site supervision by a licensed applicator.
2. Licensed applicators must undergo 40 hours of continuing education to keep their license.
  3. No person shall pollute streams, lakes, or other water supplies while loading, mixing or applying pesticides.
  4. No person shall transport, handle, store, load, apply, or dispose of any pesticide, pesticide container, or apparatus in such a manner as to pollute water supplies or waterways, or cause damage or injury to land, including humans, desirable plants and animals.

For more information on disposal requirements for solid and hazardous wastes, see *Step by Step: Fact Sheets for Hazardous Waste Generators*, publication 91-12, available from Ecology's Public Information Office.

Another useful publication is *Hazardous Waste Pesticides: A Guide for Growers, Applicators, Consultants and Dealers*, publication 89-41, dated August 1989. This brochure is available from Ecology's Public Information Office; call (360) 407-7472.

EPA also publishes a brochure, *Suspended, Cancelled and Restricted Pesticides*, which is available from the EPA Region 10 Office in Seattle; call 1-800-424-4372.

### **Air Quality Regulations**

The Puget Sound region is under the jurisdiction of regional air quality authorities who in turn most function under Washington State and Federal air quality regulations.

The Northwest Air Pollution Agency covers Whatcom, Island and San Juan counties. The Puget Sound Air Pollution Control Agency covers Snohomish, King and Pierce counties. The Olympic Air Pollution Control Authority covers Clallam, Jefferson, Mason and Thurston counties.

All three air authorities require that reasonable precautions be taken to prevent fugitive particulate material from becoming airborne when handling, loading, transporting or storing particulate material.

The Puget Sound Air Pollution Control Authority (PSAPCA) takes the above policy one step further by defining what reasonable precautions are such as: the paving of parking lots and storage areas; housekeeping measures (for example, sweeping) minimization of the accumulation of mud and dust and preventing its tracking onto public roads; and stabilization of storage piles with water spray, chemical stabilizers, tarps, or enclosures.

PSAPCA requires that abrasive blasting and spray painting operations be performed inside a booth designed to capture the blast grit and overspray. Outdoor blasting or painting of structures or items too large to be handled indoors are to be enclosed with tarps.

PSAPCA requires that reasonable precautions be taken to prevent the tracking of material onto public roads. One precaution is wheel-washing of trucks.

### **Ecology Waste Reduction Program**

Reducing the amount of wastes generated by a business or public agency also reduces the opportunity for their introduction to stormwater. The Washington Legislature established an Office of Solid Waste Services to "encourage voluntary reduction of solid wastes, hazardous wastes, hazardous



substances, air and water pollutants by citizens, businesses and government agencies.”

Local governments have been required since the early 1970's to prepare solid waste management plans. Now, cities and counties are required to include in those plans elements that address waste reduction.

Ecology conducts an annual survey to track progress and also conducts studies to identify waste reduction opportunities in specific industries. Example studies include wood treatment, paint manufacturing and metal plating.

Every business and public agency should conduct a waste reduction audit of its facilities and activities. Ecology has publications available from its Office of Solid Waste Services which detail the benefits and recommended procedures for conducting audits. Here is a brief summary:

**Management Initiative:** the beginning point is commitment by management that waste reduction and recycling are important business or agency goals.

**Use of an Audit Team:** Creating a team representing various departments and all levels of seniority will result in many good ideas and commitment to the program. It is the role of the audit team to carry out the remaining planning steps.

**Goal Setting:** Qualitative goals (“We would like to increase our use of recycled paper”), commensurate with the overall goals of the business or agency, should be established at the outset of the team's work. These can be modified as the plan is developed. They also may be modified to quantifiable goals (“We will increase our usage of recycled paper to 50 percent by the end of the year”) by the end of the process.

**Review of Operations:** Next, a review “on (recycled) paper” of the various activities of the organization should be

done as there are opportunities in every department to reduce waste. This includes purchasing, receiving, delivery, inventory, personnel, and manufacturing/processing.

When the team is evaluating the processing area it should consider source reduction, scheduling procedures, waste segregation, and preventive maintenance. For example, preventive maintenance helps reduce leaks and wastes caused by unanticipated equipment breakdowns.

**Conduct Audit:** Having identified general areas of opportunity, the team should conduct a physical audit of organization, with particular emphasis on processing.

**Generate and Evaluate List of Reduction Options:** The next step is to generate a list of reduction options or alternatives. Do an evaluation to set priorities.

**Implementation:** Implement the options according to a realistic and agreed-upon schedule.

**Follow-up Evaluation:** Management and the audit team should meet several times throughout the implementation period to evaluate progress.

**Employee Training:** Employees should be trained in the various phases of the waste reduction program. New employees should be trained soon after they are hired. All important points of the program should be summarized and easily available to all employees.

IMEX - the Industrial Materials Exchange is issued by the Seattle-King County Department of Public Health. The publication contains lists of materials offered for recycling and manufacturers looking for specific products. This is a free service. To obtain a copy, call (206)296-4899 or write: Industrial Materials Exchange, 172-20<sup>th</sup> Avenue, Seattle, Washington 98122.

## Washington State Ground Water Quality Standards

Washington State has adopted water quality standards for ground water (referenced later in this section). These standards apply to all discharges which have the potential to impact ground water. Some common types of stormwater discharges which have this potential include infiltration basins, ditches, dry wells, and drainfields.

The ground water quality standards contain four main provisions: an antidegradation policy, the use of all known available methods of treatment and control, ground water criteria, and ground water protection goal.

First, the antidegradation goal of the ground water standards is preserve the quality of ground water not degrade it. The goal for stormwater discharges is to minimize changes to background water quality as much as practical.

Second, treatment alternatives, such as BMPs, which apply to surface water also apply to discharges to ground water. The stormwater design objective should be reduce the contaminant loading in stormwater. The management objective for stormwater should be to keep contaminants out of it through source reduction and by promoting product recycling and reuse. The treatment objective should be to control and contain contaminants and cover areas in order to keep contaminants out of the stormwater. The “first flush” of stormwater should be directed into a designed infiltration system. Overflow can be directed into aquifer recharge systems such as unlined ponds, drainfields, and dry wells. If dry wells are used, they should be registered with Ecology.

Third, the ground water standards contain criteria. Criteria are numerical values which are not to be exceeded. When reached or exceeded, the discharge has made ground water unusable as a source of drinking water. The ground water criteria for contaminants that are commonly found in stormwater are:

Contaminant	Criteria
Nitrate	10.0 mg/1
Lead	0.05 mg/1
Arsenic	0.05 ug/1
Chromium	0.05mg/1
Poly. Ar. Hydrocarb.	0.01 ug/1
Copper	1.0 mg/1
Cadmium	0.01 mg/1
Zinc	5.0 mg/1

Mg/1 = milligrams per liter

Ug/1 = micrograms per liter

Fourth, ground water protection goal or enforcement limit is not appreciable change in the background ground water quality. For stormwater discharges, the limit would be no statistically significant change in background water quality

## MONITORING STORM WATER DISCHARGES

### Sampling

Sampling and analysis for pollutants is not required for:

- Stormwater
- Ground Water
- Surface Water
- Sediment Impacts of Stormwater Discharges

However, sampling and analysis are **encouraged** and may be appropriate during the development and implementation of the stormwater pollution prevention plan (SWPPP). Sampling and analysis for pollutants in stormwater will help identify which pollutants are present. Efforts can then be focused on identifying the **source** of the pollutants. The next step is the application of Best Management Practices (BMPs) to prevent or remove those pollutants.

A stormwater sampling guidance is included in the reference section for those who choose to obtain a “rough idea,” at a minimum cost, of the type of pollutants that are in the stormwater discharging from their site. The guidance is not suitable for:

- Those who want an accurate characterization of the quality and quantity of stormwater discharging from their site.
- Facilities that are required to obtain an individual NPDES permit.
- Confirmation on whether a water quality standard violation is occurring.

For facility operators who require accurate characterization of the stormwater quality, the U.S. Environmental Protection Agency (USEPA) has a document entitled, “NPDES Stormwater Sampling Guidance” (EPA 833-B-92-001), July 1992. To obtain a copy, call Ecology’s stormwater request line at (360) 407-7156; or contact EPA Region X in Seattle at 1-800-424-4372 to obtain this or other EPA documents (EPA staff request that you have document titles and/or numbers before making a request.)

### Sample Analyses

Once a sample is taken, it is extremely important that it be analyzed properly. Only reputable labs should be used in making analysis of samples. Ecology maintains a laboratory accreditation program. A current list of accredited labs may be obtained by calling Ecology’s Quality Assurance Section at (360) 895-4649. For a list of commercial labs within Washington State, call Ecology’s Stormwater request line at (360) 407-7156.

## Stormwater Sampling Guidance

(Not required in the General Stormwater Permit for Industrial Activity)

*Included in this section:*

- Parameters to Sample
- Required Containers
- Preservation Techniques
- Holding Times
- Required Sample Volumes
- Accredited Labs

### Benefits of Sampling

Sampling of stormwater for pollutants that may be transported to ground water, surface water, or sediments is **not** a requirement of Ecology's general stormwater permit. This sampling guidance is suggested for those facilities which choose to sample their stormwater discharges to help in the development and implementation of their Stormwater Pollution Prevention Plans (SWPPP). However, sampling is encouraged to assist in the development of suitable Best Management Practices (BMPs) required by Ecology's permit.

Stormwater data can be used to identify potential sources of pollutants which then can either be eliminated or controlled more specifically through operational, source control, or treatment measures. Sampling is a good method to determine if your existing stormwater management plan is adequate and where treatment BMPs need to be employed.

### Where to Sample

The ideal sampling location would be the lowest stormwater runoff point from each drainage area. A sample point should be easily accessible on foot and in a location that will not cause hazardous sampling conditions. If the stormwater at a selected location is not representative of a facility's total runoff, the facility should sample at several locations to characterize runoff from each potential pollutant source. Stormwater samples should be collected within the first 30 minutes of the rainfall event in order to get the first flush of any pollutants that may be present.

### What Parameters Should Be Tested For

You may want to consider testing your stormwater discharges for:

Total Suspended Solids (TSS);  
Specific conductance; Oil & Grease;  
pH

Along with any pollutant that you may reasonably expect to find in your stormwater.

### Manual Grab Sampling

A manual grab sample is collected by inserting a container under or down current of a discharge with the container opening facing upstream. Generally, simplified equipment and procedures can be used. In most cases, the sample container itself may be used to collect the sample. Less accessible outfalls may require the use of poles and buckets to collect grab samples. Below are some recommended procedures for taking grab samples:

- Label sample containers before sampling event, noting the date and sample location.
- Take a cooler with ice to the sampling point.
- Avoid stirring up sediments.
- Hold container so the opening faces upstream.
- Avoid touching the inside of the container to prevent contamination.
- Keep sample free from uncharacteristic floating debris.
- Transfer samples into proper containers (e.g., from bucket to sample container). However, fecal coliform, fecal streptococcus, phenols and oil and grease should remain in original containers.
- If taking numerous grab samples, keep the samples separate and labeled clearly.

### Sample Handling and Preservation

Table II presents a matrix of required containers, preservation techniques, and holding times for each parameter. Most laboratories can provide clean sample containers, preservatives, and sample forms and can advise further on sampling handling and preservation.

Call Ecology's Quality Assurance Section at (360) 895-4649 to obtain a list of accredited labs within the state and for other labs outside the state. For a list of commercial labs within the state, call Ecology Stormwater request line at (360) 407-7156.

### Health and Safety

Stormwater sampling may occur in hazardous areas or weather conditions, such as the following:

- Hazardous weather conditions (e.g., wind, lightning, flooding, etc.)
- Sampling in confined spaces (e.g., manholes)
- Hazards associated with chemicals
- Biological hazards (e.g., rodents and snakes)
- Physical hazards (e.g., traffic, falling objects, sharp edges, slippery footing)
- The potential for lifting injuries from opening or removing access panels and manhole covers, etc.)



Since sampling hazards can be life threatening, safety must be the highest priority for all personnel. No sampling personnel should ever place themselves in danger or conditions which might be unsafe.

### Some Suggested Parameters to Sample

*Most facilities should consider monitoring their stormwater discharges for the following conventional pollutants: pH; specific conductance; oil and grease; total suspended solids (TSS). In addition, consider sampling for chemicals that may be present in the stormwater due to their use or production in the industrial operations.*

### **Suggested Parameters for Specific Industrial Activity**

**Airports.** Airports with vehicle maintenance shops, equipment cleaning operations, fueling, aircraft maintenance, or deicing operations (including runways, taxiways, ramps, and dedicated aircraft deicing stations, sampling should take place when deicing activities are occurring) may want to monitor stormwater for:

pH; Oil and Grease; Five Day Biochemical Oxygen Demand (BOD<sub>5</sub>); Specific Conductance; Total Suspended Solids (TSS); the primary ingredient used in the deicing materials used at the site (e.g., ethylene glycol, urea, etc.); and any pollutant that may be present in the stormwater runoff.

**Battery Reclaimers.** Facilities with areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation (including material handling activities) at facilities that reclaim lead acid batteries may want to monitor stormwater for:

pH; Oil and Grease; Total Suspended Solids (TSS); Specific Conductance; Sulfate; Sodium; Total Recoverable Aluminum; Total Recoverable Copper; Total Recoverable Iron; Total Recoverable Lead; Total Recoverable Zinc; and any pollutant that may be present in the stormwater runoff.

**Citrus Juice Producers.** pH; Specific Conductance; Nitrate; Total Kjeldahl Nitrogen (TKN); Ammonia; Total Organic Carbon (TOC); Potassium; Total Recoverable Iron; Lead Arsenate; and any pollutant that may be present in the stormwater runoff.

**Electroplating Industry.** Facilities may want to monitor stormwater from manufacturing areas (including air vents); material storage; and loading and unloading areas for:

pH; Specific Conductance; Fluoride; Nitrate; Ammonium; Total Recoverable Cadmium; Total Recoverable Chromium; Total Recoverable Copper; Total Recoverable Cyanide; Total Recoverable Lead; Total Recoverable Nickel; and any pollutant that may be present in the stormwater runoff.

**Incinerators/BIFs.** Incinerators (including Boilers and Industrial Furnaces (BIFs)) that burn hazardous waste and operate under interim status or a permit under Subtitle C of RCRA may want to monitor stormwater for:

pH; Total Dissolved Solids (TDS); Oil & Grease; Total Organic Carbon (TOC); Chloride; Total Kjeldahl Nitrogen (TKN); Total Recoverable Arsenic; Total Recoverable Barium; Total Recoverable Cadmium; Total Recoverable Chromium; Total Cyanide; Total Recoverable Lead; Magnesium (total recoverable); Magnesium (dissolved); Total Mercury; Total Recoverable Selenium; Total Recoverable Silver; Acute Whole Effluent Toxicity; and any pollutant that may be present in the stormwater runoff.

**Landfills.** Any active or inactive landfill; land application site or open dump without a stabilized final cover may want to sample stormwater for:

pH; Specific Conductance; Total Dissolved Solids (TDS); Total Organic Carbon (TOC); Total Kjeldahl Nitrogen (TKN); Alkalinity; Ammonium; Sulfate; Chloride; Sodium, Potassium; Total Recoverable Iron; Acute Whole Effluent

Toxicity; and any pollutant that may be present in the stormwater runoff.

**Leather Tanning Industry.** pH; Specific Conductance; Total Organic Carbon (TOC); Sulfate; Chloride; Specific Conductance; Sodium; Total Recoverable Chromium/Chromium VI; Total Recoverable Lead; and any pollutant that may be present in the stormwater runoff.

**Meat Packing.** Animal handling areas, manure management (or storage) areas, and production waste management (or storage) areas at meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils, may want to monitor stormwater for:

pH; Total Suspended Solids (TSS); Five Day Biochemical Oxygen demand (BOD<sub>5</sub>); Oil and Grease; Total Kjeldahl Nitrogen (TKN); Total Phosphorus; Fecal Coliform; and any pollutant that may be present in the stormwater runoff.

**Nylon Polymer Manufacturer.** pH; Specific Conductance; Total Dissolved Solids (TDS); Nitrate; Ammonium; Total Organic Carbon (TOC); Cyclohexane; Chlorobenzene; 1,1,1-Trichloroethane; Methylene Chloride; Methylene chloride; and any pollutant that may be present in the stormwater runoff.

**Phosphate Chemical Process Industry.** pH; Specific Conductance; Total Dissolved Solids (TDS); Orthophosphate (soluble); Sulfate; Fluoride; Ammonium; Total Recoverable Iron; Sodium; Gross alpha; Radium-226; Polonium-210.

**Primary Metal Industries.** Facilities with stormwater discharges associated with industrial activity classified as Standard Industrial Classification (SIC) 33 (Primary Metal Industry) may want to monitor stormwater for the following parameters:

pH; Total Suspended Solids (TSS); Specific Conductance; Oil and Grease; Acute Whole Effluent Toxicity; Total Recoverable Arsenic; Total Recoverable Cadmium; Total Recoverable Copper; Total Recoverable Chromium; Total Recoverable Lead; and any pollutant that may be present in the stormwater runoff.

Facilities that are classified as SIC 33 only because they manufacture pure silicon and/or semiconductor grade silicon should not consider monitoring for Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Arsenic, Total Recoverable Chromium or Acute Whole Effluent Toxicity.

**Printed Circuit Board Manufacture.** pH; Specific Conductance; Fluoride; Sulfate; Ammonium; Total Recoverable Copper; Total Recoverable Cyanide; Total Recoverable Lead; and any pollutant that may be present in the stormwater runoff.

**Pulpwood/Paper Manufacture.** pH; Specific Conductance; Sulfate; Sulfide; Sodium; Total Recoverable Iron; Methylphenols; Dimethylphenols; Dioxin; and any pollutant that may be present in the stormwater runoff.

#### **Section 313 of EPCRA Facilities.**

Facilities that are subject to Section 313 of EPCRA for chemicals which are classified as 'Section 313 water priority chemicals' may want to monitor stormwater that comes into contact with any equipment, tank, container or other vessel or area used for storage of a Section 313 water priority chemical, or located at a truck or rail car loading or unloading area where a Section 313 water priority chemical is handled, for the following parameters;

pH; Specific Conductance; Oil and Grease; Five Day Biochemical Oxygen Demand (BOD<sub>5</sub>); Total Suspended Solids (TSS); Total Kjeldahl Nitrogen (TNK); Total Phosphorus; Acute Whole Effluent Toxicity; and any pollutant that may be present in the stormwater runoff.

**Turpentine/Pine Oil Industry.** a-Pinene; Limonene; d-Camphor; Fenchone; Borneol; 4-Methylphenol; 3-Methylphenol; 2,4-Dimethylphenol; o-Methoxyphenol; and any pollutant that may be present in the stormwater runoff.

**Waste Oil Recyclers.** pH; Specific Conductance; Sulfate; BETX; 1,1,1-Trichloroethane; Trichloroethylene; Tetrachloroethylene; Total Recoverable Iron; Total Recoverable Lead; Acenaphthene; Anthracene; Bis (2-ethylhexylphthalate); Chrysene; Fluorene; 2-Methylnaphthalene; Phenanthrene; Pyrene; and any pollutant that may be present in the stormwater runoff.



<b>Table II – Required Containers, Preservation Techniques, and Holding Times</b>			
<b>Parameter</b>	<b>Container (1)</b>	<b>Preservative (2), (3)</b>	<b>Maximum Holding Time (4)</b>
<b>Bacterial Tests</b>			
Coliform, fecal and total	P, G	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	6 hours
Fecal streptococci	P, G	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	6 hours
<b>Inorganic Tests</b>			
Acidity	P, G	Cool, 4°C	14 days
Alkalinity	P, G	Cool, 4°C	14 days
Ammonia	P, G	Cool, 4°C H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Biochemical oxygen demand	P, G	Cool, 4°C	48 hours
Bromide	P, G	None required	28 days
Biochemical oxygen demand, carbonaceous	P, G	Cool, 4°C	48 hours
Chemical oxygen demand	P, G	Cool, 4°C H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Chloride	P, G	None required	28 days
Chlorine, total residual	P, G	None required	Analyze immediately
Color	P, G	Cool, 4°C	48 hours
Cyanide, total and amenable to chlorination	P, G	Cool, 4°C NaOH to pH >12 0.6g ascorbic acid (5)	14 days (6)
Fluoride	P	None required	28 days
Hardness	P, G	HNO <sub>3</sub> to pH <2 H <sub>2</sub> SO <sub>4</sub> to pH <2	6 months
Hydrogen ion (pH)	P, G	None required	Analyze immediately
Kjeldahl and organic Nitrogen	P, G	Cool, 4°C H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
<b>Metals (7)</b>			
Chromium VI	P, G	Cool, 4°C	24 hours
Mercury	P, G	HNO <sub>3</sub> to pH <2	28 days
Metals, except above	P, G	HNO <sub>3</sub> to pH <2	6 months
Nitrate	P, G	Cool, 4°C	48 hours
Nitrate-nitrite	P, G	Cool, 4°C H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Nitrite	P, G	Cool, 4°C	48 hours
Oil & Grease	G	Cool, 4°C HCl or H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Organic carbon	P, G	Cool, 4°C HCl or H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Orthophosphate	P, G	Filter immediately	48 hours

<b>Table II – Required Containers, Preservation Techniques, and Holding Times</b>			
		Cool, 4°C	
<b>Metals (7)</b>			
Oxygen, Dissolved Probe	G bottle and top	None required	Analyze immediately
Dissolved oxygen, Winkler method	G bottle and top	Fix on site and store in dark	8 hours
Phenols	G only	Cool, 4°C H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Phosphorus (elemental)	G	Cool, 4°C	48 hours
Phosphorus, total	P, G	Cool, 4°C H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Residue, total	P, G	Cool, 4°C	7 days
Residue, filterable	P, G	Cool, 4°C	7 days
Residue, nonfilterable (TSS)	P, G	Cool, 4°C	7 days
Residue, settleable	P, G	Cool, 4°C	48 hours
Residue, volatile	P, G	Cool, 4°C	7 days
Silica	P	Cool, 4°C	28 days
Specific conductance	P, G	Cool, 4°C	28 days
Sulfate	P, G	Cool, 4°C	28 days
Sulfide	P, G	Cool, 4°C, add zinc acetate plus sodium hydroxide to pH >9	7 days
Sulfite	P, G	None required	Analyze immediately
Surfactants	P, G	Cool, 4°C	48 hours
Temperature	P, G	None required	Analyze
Turbidity	P, G	Cool, 4°C	48 hours
<b>Organic Tests (8)</b>			
Purgeable halocarbons	G, Teflon-lined septum	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	14 days
Purgeable aromatic hydrocarbons	G, Teflon-lined septum	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5) HCl to pH <2 (9)	14 days
Acrolein and acrylonitrile	G, Teflon-lined septum	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5) Adjust H to 4-5 (10)	14 days
Phenols (11)	G, Teflon-lined cap	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	7 days until extraction, 40 days after extraction
Benzidines (11)	G, Teflon-lined cap	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	7 days until extraction (13)
Phthalate esters (11)	G, Teflon-lined cap	Cool, 4°C	7 days until extraction, 40 days after extraction
Nitrosamines (11), (14)	G, Teflon-lined cap	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	7 days until extraction, 40 days after extraction
PCBs (11) acrylonitrile	G, Teflon-lined cap	Cool, 4°C	7 days until extraction, 40 days after extraction
Nitroaromatics and isophorone (11)	G, Teflon-lined cap	Cool, 4°C, store in dark 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	7 days until extraction, 40 days after extraction

<b>Table II – Required Containers, Preservation Techniques, and Holding Times</b>			
Polynuclear aromatic hydrocarbons (11)	G, Teflon-lined cap	Cool, 4°C, store in dark 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	7 days until extraction, 40 days after extraction
<b>Organic Tests (8)</b>			
Haloethers (11)	G, Teflon-lined cap	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	7 days until extraction, 40 days after extraction
Chlorinated hydrocarbons (11)	G, Teflon-lined cap	Cool, 4°C	7 days until extraction, 40 days after extraction
TCDD (11)	G, Teflon-lined cap	Cool, 4°C 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (5)	7 days until extraction, 40 days after extraction
<b>Pesticides Tests</b>			
Pesticides (11)	G, Teflon-lined cap	Cool, 4°C pH 5-9(15)	7 days until extraction, 40 days after extraction
<b>Radiological Tests</b>			
Alpha, beta, and radium	P, G	HNO <sub>3</sub> to pH <2	6 months

Excerpt from 40 CFR 136.3 which relate to the above table.

- (1) Polyethylene (P) or Glass (G).
- (1) Sample preservation should be performed immediately upon sample collection. For composite chemical samples each aliquot should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each aliquot, then chemical samples may be preserved by maintaining at 4°C until compositing and sample splitting is completed.
- (3) When any sample is to be shipped by common carrier or sent through the United States Mails, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR Part 172). The person offering such material for transportation is responsible for ensuring such compliance. For the preservation requirements of Table II, the Office of Hazardous Materials, Materials Transportation Bureau,

Department of Transportation has determined that the hazardous Materials Regulations do not apply to the following materials: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO<sub>3</sub>) in water solutions at concentrations of 0.15% by weight or less (pH about 1.62 or greater); Sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater); and Sodium hydroxide (NaOH) in water solutions at concentrations of 0.080% by weight or less (pH about 12.30 or less).

- (4) Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still be considered valid.
- (5) Should only be used in the presence of residual chlorine.

- (6) Maximum holding time is 24 hours when sulfide is present. Optionally all samples may be tested with lead acetate paper before pH adjustments in order to determine if sulfide is present. If sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and the NaOH is added to pH 12.
- (7) Samples should be filtered immediately on-site before adding preservative for dissolved metals.
- (8) Guidance applies to samples to be analyzed by GC, LC, or GC/MS for specific compounds.
- (9) Sample receiving no pH adjustment must be analyzed within seven days of sampling.
- (10) The pH adjustment is not required if acrolein will not be measured. Samples for acrolein receiving no pH adjustment must be analyzed within 3 days of sampling.
- (11) When the extractable analytes of concern fall within a single chemical category, the specified preservative and maximum holding times should be observed for optimum safeguard of sample integrity. When the analytes of concern fall within two or more chemical categories, the sample may be preserved by cooling to 4°C, reducing residual chlorine with 0.008% sodium thiosulfate, storing in the dark, and adjusting the pH to 6-9; samples preserved in this manner may be held for seven days before extraction and for forty days after extraction. Exceptions to this optional preservation and holding time procedure are noted in footnote 5 (re the requirement for thiosulfate reduction of residual chlorine), and footnotes 12, 13 (re the analysis of benzidine).
- (12) If 1,2-diphenylhydrazine is likely to be present, adjust the pH of the sample to  $4.0 \pm 0.2$  to prevent rearrangement to benzidine.
- (13) Extracts may be stored up to 7 days before analysis if storage is conducted under inert (oxidant-free) atmosphere.
- (14) For the analysis of diphenylnitrosamine, add 0.008%  $\text{Na}_2\text{S}_2\text{O}_3$  and adjust pH to 7-10 with NaOH within 24 hours of sampling.
- (15) The pH adjustment may be performed upon receipt at the laboratory and may be omitted if the samples are extracted within 72 hours of collection. For the analysis of aldrin, add 0.008%  $\text{Na}_2\text{S}_2\text{O}_3$ .

Source: 40 CFR 136.3 Table II

Volume of Sample Required For Determination of the Various Constituents of Industrial Wastewater	
Tests	Volume of Sample, ml*
<b>Physical</b>	
Color and odor**	100 to 500
Corrosivity**	flowing sample
Electrical conductivity**	100
pH, electrometric**	100
Radioactivity	100 to 1,000
Specific gravity**	100
Temperature**	flowing sample
Toxicity**	1,000 to 20,000
Turbidity**	100 to 1,000
<b>Chemical</b>	
VOCs	100
Dissolved Gases	
Ammonia, ***NH <sub>3</sub>	500
Carbon Dioxide, *** free CO <sub>2</sub>	200
Chlorine, ***free Cl <sub>2</sub>	200
Hydrogen, ***H <sub>2</sub>	1,000
Hydrogen sulfide, ***H <sub>2</sub> S	500
Oxygen, ***O <sub>2</sub>	500 to 1,000
Sulfur dioxide, ***free SO <sub>2</sub>	100
<b>Miscellaneous</b>	
Acidity and alkalinity	100
Bacteria (fecal coliform)	500
Bacteria (fecal streptococcus)	100
Biochemical oxygen demand (BOD)	100 to 500
Carbon dioxide, total CO <sub>2</sub> (including CO <sub>3</sub> , HCO <sub>3</sub> , and free)	200
Chemical oxygen demand (dichromate)	50 to 100
Chlorine requirement	2,000 to 4,000
Chlorine, total residual Cl <sub>2</sub> (including OCl, HOCl, NH <sub>2</sub> Cl, NHCl <sub>2</sub> , and free)	200
Chloroform-extractable matter	1,000
Detergents	100 to 200
Hardness	50 to 100
Hydrazine	50 to 100
Micro-organisms	100 to 200
Volatile and filming amines	500 to 1,000
Oily matter	3,000 to 5,000
Organic nitrogen	500 to 1,000
Phenolic compounds	800 to 4,000
Polyphosphates	100 to 200
Silica	50 to 100
Solids, dissolved	100 to 20,000
Solids, suspended	50 to 1,000
Tannin and lignin	100 to 200

Volume of Sample Required For Determination of the Various Constituents of Industrial Wastewater	
<b>Cations</b>	
Aluminum, Al <sup>+3</sup>	100 to 1,000
Ammonium, ***NH <sub>4</sub> <sup>+</sup>	500
Antimony, Sb <sup>+3</sup> to Sb <sup>+5</sup>	100 to 1,000
Arsenic, As <sup>+3</sup> to As <sup>+5</sup>	100 to 1,000
Barium, Ba <sup>+2</sup>	100 to 1,000
Cadmium, Cd <sup>+2</sup>	100 to 1,000
Calcium, Ca <sup>+2</sup>	100 to 1,000
Chromium, Cr <sup>+3</sup> to Cr <sup>+6</sup>	100 to 1,000
Copper, Cu <sup>+2</sup>	200 to 4,000
Iron, *** Fe <sup>+2</sup> and Fe <sup>+3</sup>	100 to 1,000
Lead, Pb <sup>+2</sup>	100 to 4,000
Magnesium, Mg <sup>+2</sup>	100 to 1,000
Manganese, Mn <sup>+2</sup> to Mn <sup>+7</sup>	100 to 1,000
Mercury, Hg <sup>+</sup> to Hg <sup>+2</sup>	100 to 1,000
Potassium, K <sup>+2</sup>	100 to 1,000
Nickel, Ni <sup>+2</sup>	100 to 1,000
Silver, Ag <sup>+</sup>	100 to 1,000
Sodium, Na <sup>+</sup>	100 to 1,000
Strontium, Sr <sup>+2</sup>	100 to 1,000
Tin, Sn <sup>+2</sup> and Sn <sup>+4</sup>	100 to 1,000
Zinc, Zn <sup>+2</sup>	100 to 1,000
<b>Anions</b>	
Bicarbonate, HCO <sub>3</sub>	100 to 200
Bromide, Br	100
Carbonate, CO <sub>3</sub>	100 to 200
Chloride, Cl	25 to 100
Cyanide, Cn	25 to 100
Fluoride, Fl	200
Hydroxide, OH	50 to 100
Iodide, I	100
Nitrate, NO <sub>3</sub>	10 to 100
Nitrite, NO <sub>2</sub>	50 to 100
Phosphate, Ortho, PO <sub>4</sub> ; HPO <sub>4</sub> ; H <sub>2</sub> PO <sub>4</sub>	50 to 100
Sulfate, SO <sub>4</sub> , HSO <sub>4</sub>	100 to 1,000
Sulfide, S, HS	100 to 500
Sulfite, SO <sub>3</sub> ; HSO <sub>3</sub>	50 to 100
<p>* Volumes specified in this table should be considered as guides for the approximate quantity of sample necessary for a particular analysis. The exact quantity used should be consistent with the volume prescribed in the standard method of analysis, whenever a volume is specified.</p> <p>** Aliquot may be used for other determinations.</p> <p>*** Samples for unstable constituents must be obtained in separate containers, preserved as prescribed, completely filled, and sealed against all exposure.</p>	
Source: Associated Water and Air Resource Engineers, Inc., 1973, <i>Handbook for Monitoring Industrial Wastewater</i> , EPA Technology Transfer.	

- **Flow** – If flow is measured at the time of sampling, the measurement must be recorded and accompanied by a description of the flow measurement method and calculations.
- **Date, Time, and Documentation of Sample Shipment** – The shipment method (e.g., air, rail, or bus) as well as shipping papers or manifest number should be noted.
- **Comments** – All relevant information pertaining to the sample or the sampling site should be recorded. Such comments could include the condition of the sample site, observed characteristics of the sample, environmental conditions that may affect the sample, and problems encountered during sampling.

## ACCREDITED LABORATORIES

The Department of Ecology accredits environmental laboratories for water quality analyses and determinations (including sediments and sludges). If you need specific information regarding the parameters or methods for which a lab is accredited, contact the lab and ask for the information or a copy of the lab's current Scope of Accreditation. You can call Ecology's Quality Assurance Section at (360) 895-4649 for additional information. A list of laboratories is located at [www.wa.gov/ecology/eils/labs/wa.html](http://www.wa.gov/ecology/eils/labs/wa.html) on the Internet.

The Department of Ecology accredits laboratories for the following categories of parameters:

CI	General Chemistry	R	Radiochemistry
CII	Trace of Metals	M	Microbiology
OI	Organics by GC	B	Bioassay
OII	Organics by GC-MS	S	Sediments



## ADMINISTRATIVE REQUIREMENTS FOR SWPPP

The information provided in this section includes information on:

- Guidance for stormwater discharges to a separate municipal storm sewer system
- Required signatures on the SWPPP
- Location and access to the SWPPP for local government and Ecology
- Modifying the SWPPP
- Non-compliance with stormwater permit notification
- Reports and record keeping
- Transferring Ownership of Facility
- Ceasing Operation and Submittal of Notice of Termination

### Discharges to Municipal Separate Storm Sewer System

Industrial facilities that discharge stormwater through a large or medium municipal separate storm sewer system (serves a population of 100,000 or more) must notify the municipality. Submit a copy of the stormwater permit application to the municipality.

Industries must comply with any applicable conditions established by the municipalities stormwater management program. The municipality may require monitoring and/or additional source control(s) of the facility's stormwater that discharges to their system. If you have questions, or need technical assistance on stormwater that discharges to the municipal system, contact the local government in your area.

The following is a list of the larger local government's telephone number:

Seattle	(206) 684-7589
King County	(206) 296-6519
Tacoma	(253) 591-5588
Pierce County	(253) 596-2725
Snohomish County	(425) 388-3464
Spokane	(509) 625-4600
Spokane County	(509) 456-3600

### Required Signatures

Stormwater pollution prevention plans, any modifications to the Plan, and certification statements must be signed by a duly authorized representative of the facility (refer to General Condition G20 of Ecology's general stormwater permit).

### Plan Retention and Availability

Retain the stormwater pollution prevention plan (SWPPP), the original permit application, and stormwater permit on-site, or within reasonable access to the site. The SWPPP shall be made available upon request from Ecology or local government officials. The municipal operator of the storm sewer system also has authority to review the stormwater documents for your site.

Do not submit the SWPPP for your facility to Ecology unless you are requested to do so.

Note: Should the facility operation cease, the SWPPP shall be retained for a period of up to three years after termination of the permit.

### Required Plan Modifications

After conducting a site visit and reviewing the SWPPP for your facility, Ecology may notify you to take corrective action and modify the SWPPP. Ecology will advise you on when modification(s) and

implementation shall be completed; and whether those modifications shall be submitted to Ecology for review.

Modify the SWPPP whenever there is a change in design, construction, operation, or maintenance which cause(s) the SWPPP to be less effective in controlling pollutants. These modifications need not be submitted to Ecology.

Whenever an inspection, conducted by facility staff, reveals that the description of potential pollutant sources or the pollution prevention measures and controls identified in the current SWPPP are inadequate, modify the SWPPP within **2 weeks** of such inspection. Provide for the implementation of any modifications to the SWPPP in a timely manner. These modifications do not need to be submitted to Ecology.

#### **Non-Compliance Notification to Ecology's Regional Office**

If, for any reason, a permittee does not comply with, or will be unable to comply with, conditions specified in the stormwater permit, the permittee shall, at a minimum, provide the following information to the appropriate water quality staff in Ecology's regional office:

1. A description of the nature and cause of non-compliance, including the quantity and quality of any unauthorized waste discharges.
2. The period of non-compliance, including exact dates and times and/or the anticipated time when the Permittee will return to compliance.
3. The steps taken, or to be taken, to reduce, eliminate, and prevent recurrence of the non-compliance.

Take immediate action (as quickly as practical) to stop, contain, and clean up any discharge of spills. Take reasonable steps to minimize any adverse impacts to

waters of the state and to correct the problem. Notify Ecology's regional office by telephone so that an investigation can be made; evaluate whether any resulting impacts may occur, and if additional corrective action(s) need to be done.

Discharges that could constitute a threat to human health, welfare, or the environment, shall be reported to Ecology's regional office **within 24 hours** from the time the permittee became aware of the circumstances. If the information is provided orally, follow up with written documentation covering the event within five days or unless Ecology waives or extends this requirement. (Ecology grants extensions and waiver of documentation on a case-by-case basis.)

Compliance with the preceding requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of Ecology's permit or the resulting liability for failure to comply.

#### **Ecology Regional Office Contacts for Non-Compliance Reporting**

Northwest Regional Office, Bellevue (425) 649-7000  
Southwest Regional Office, Olympia (360) 407-6300  
Eastern Regional Office, Spokane (509) 456-2926  
Central Regional Office, Yakima (509) 575-2490

#### **Reports and Record Keeping**

- Reports on incidents, such as discharge of spills and other non-compliance notification, shall be included in the facility records.
- General Condition G19, of the stormwater permit, stipulates that while your permit is active, "any" records required by the permit shall be retained for a period of **five** years. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by Ecology.

## CHANGING OWNERSHIP OR CEASING OPERATION

If the business is sold, the following steps may be taken:

- If the new operation is, basically, the same, the new owner may assume coverage under the previous owner's permit.
- The new owner may assume ownership of the current SWPPP by modifying the SWPPP according to any changes in the operation;
- Both the old and new owner shall complete a "Transfer of Ownership" form (located in the "Reference" section of this manual).
- The new owner shall submit, along with the transfer request form, a new stormwater application form and mark it as a "Change of Information" along with the current stormwater permit number. (Application forms are located in the back of the stormwater permit.)
- An adjusted permit fee billing statement will be processed and mailed to both parties.
- The **previous** owner should retain a **copy** of their original stormwater application and their SWPPP for up to **3 years**.

### **Ceasing Operation or Planning to Move to a New Location?**

Located in the back of the stormwater permit, is a Notice of Termination request form. Complete and submit the form to Ecology after all materials, equipment, debris, etc., that is exposed to stormwater, have been removed from the site.

Stormwater permit fees continue until the termination request has been received by Ecology.



**Department of Ecology  
Water Quality Program**

**Transfer Ownership of Stormwater General Permit(s)  
For  
Industrial Facilities and/or Construction Sites**

*WAC 173.226.210 Transfer of permit coverage. Coverage under a general permit is automatically transferred to a new discharger if:*

- (1) A written, signed agreement between the old and new discharger containing a specific date for transfer of permit responsibility, coverage, and liability is submitted to the director; and*
- (2) The director does not notify the old and new discharger of the director's intent to revoke coverage under the general permit. If this notice is not given, the transfer is effective on the date specified in the agreement mentioned in subsection (1) of this section.*

Answer only the questions which apply:

- | Yes                      | No                       |  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Will any of the activities change at the facility or construction site? If yes, explain _____<br>_____<br>(Attach sheet if additional explanation necessary)   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the facility or construction site currently out of compliance with the stormwater permit (including non-payment of permit fees)? If yes, explain _____<br>_____<br>(Attach sheet if additional explanation necessary) |
| <input type="checkbox"/> | <input type="checkbox"/> | Has the Department of Ecology determined that the owner of the facility must obtain an individual National Pollutant Discharge Elimination System (NPDES) or industry-specific general permit?                           |
| <input type="checkbox"/> | <input type="checkbox"/> | If the facility has an individual or industry-specific general NPDES permit, has that permit been revised to include stormwater discharges?  |

**The new owner shall complete and submit a new Notice of Intent. Post the current Permit Number and mark the Change of Information box in the upper right hand corner of the application.**

Permit Number: SO3-\_\_\_\_\_

Facility Name \_\_\_\_\_

Location: \_\_\_\_\_  
\_\_\_\_\_



***This document will be considered incomplete unless both the previous owner/representative and new owner/representative signs it.***

Previous Owner Information:	
Company Name:	_____
Mailing Address:	_____
Telephone No:	(____) ____ - _____
Owner/Company Representative's Name:	_____
	Printed Name/Title
Owner/Company Representative's Name:	_____
	Signature

New Owner Information:	
Company Name:	_____
Mailing Address:	_____
Telephone No:	(____) ____ - _____
Owner/Company Representative's Name:	_____
	Printed Name/Title
Owner/Company Representative's Name:	_____
	Signature
Date new owner assumed responsibility and liability for permit coverage: ____/____/____	
	Month Day Year

Please send the completed Transfer of Ownership form and Notice of Intent Application to:

Washington State Department of Ecology  
Water Quality Program  
Stormwater Unit  
P O Box 47696  
Olympia, WA 98504-7696

cc: Permit Fee Administrator  
Ecology inspector

## ECOLOGY CONTACTS

### Questions

#### Assistance Available on Stormwater General Permits for Industrial and Construction Sites

		(Area Code 360)
<b>Linda Matlock, Environmental Specialist</b>		<b>407-6437</b>
- Notice of Intent Applications, Permit Issuance, Record Keeping General Best Management Practices for Stormwater		

*Fax Machine No.: (360) 407-6426*

*Mail Box Request Line: (360) 407-7156*

#### Ecology Regional Assistance (Water Quality Inspectors)

If you have questions regarding stormwater runoff from your site or need clarification on stormwater pollution prevention plans, select the county where your facility/site is located and call the Ecology staff person assigned to that county.

Northwest Regional Office in Bellevue		
<b>Bob Newman</b>	<b>(425) 649-7046</b>	Island, San Juan, Skagit, Whatcom
<b>Bob Wright</b>	<b>(425) 649-7060</b>	Snohomish and Kitsap
<b>Ron Devitt</b>	<b>(425) 649-7028</b>	King
Southwest Regional Office In Olympia (Lacey)		
<b>Dick Schroeder (Industrial)</b>	<b>(360) 407-6273</b>	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum
<b>Loree Randall (Construction)</b>	<b>(360) 407-6294</b>	
Eastern Regional Office in Spokane		
<b>Paul Turner</b>	<b>(509) 625-5181</b>	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman
Central Regional Office in Yakima		
<b>Pamela Perun</b>	<b>(509) 454-7869</b>	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima

## **Stormwater Reference Documents**

### **Stormwater Management Manual for the Puget Sound Basin**

Washington Department of Ecology, WDOE 91-75. Manual is being revised to be applicable statewide. Useful to developers, engineers, and construction contractors who need guidance to control erosion and sedimentation from construction projects. It is a good reference for those who need to comply with local government requirements for stormwater runoff. Manual may be used to design treatment Best Management Practices (BMPs) for industrial facilities. Call (360) 407-6614 to request a copy. There is a charge for this document (around \$30+).

### **NPDES Stormwater Sampling Guidance Document**

USEPA 833-B-92-001 To obtain a copy of this or other EPA documents, call EPA Region X in Seattle at 1-800-424-4372. EPA Hotline staff request that you have the document title and/or number.





*Best Management Practices result in clean stormwater runoff. Help protect our water.*